T.C. SAĞLIK BİLİMLERİ ÜNİVERSİTESİ
DR.ABDURRAHMAN YURTASLAN ONKOLOJİ SUAM
RADYOLOJİ KLİNİĞİ

ALK REARRANJMANI VE EGFR MUTASYONU OLAN AKCİĞER ADENOKARSİNOMLARINDA İNTRATÜMÖRAL VE PERİTÜMÖRAL KONTRASTLI BİLGİSAYARLI TOMOGRAFİ TEMELLİ TEXTURE ANALİZ VERİLERİNİN TANISAL DEĞERİ

Dr. Abidin Emre Kılıç

TIPTA UZMANLIK TEZİ

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TEŞEKKÜR

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KISALTMALAR DİZİNİ

ALK : Anaplastic Lymphoma Kinase

BT : Bilgisayarlı tomografi

DSÖ : Dünya Sağlık Örgütü

EGFR : Epitelyal Growth Factor Receptor

GLCM : Gray Level Co-occurens Matrix

GLDM : Gray Level Depence Matrix

GLRLM : Gray Level Run Length Matrix

GLSZM : Gray Level Size Zone Matrix

KHAK : Küçük hücreli akciğer kanseri

KHDAK : Küçük hücreli dışı akciğer kanseri

KT : Kemoterapi

LAP : Lenfadenopati

NGTDM : Neigboring Gray Tone Difference Matrix

PET/BT : Pozitron emisyon tomografi/ bilgisayarlı tomografi

RT : Radyoterapi

TA : Texture analizi

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ÖZET

ALK REARRANJMNI VE EGFR MUTASYONU OLAN AKCİĞER ADENOKARSİNOMLARINDA İNTRATÜMÖRAL VE PERİTÜMÖRAL KONTRASTLI BİLGİSAYARLI TOMOGRAFİ TEMELLİ TEXTURE ANALİZ VERİLERİNİN TANISAL DEĞERİ

Amaç: Bu çalışmada, intatümöral ve peritümöral alandan elde olunan texture analiz verilerinin akciğer adenokarsinomlarında mutasyonel değişiklikleri, mediastinal lenf nodu metastazıve uzak metastazı öngörmede tanısal değerini saptamak ve tartışmayı amaçladık.

Gereç ve yöntem:18- 99 yaş aralığında mutasyon ve klinik bilgisine ulaşılabilen 45 hastanın tedavi öncesi bilgisayarlı tomografi görüntüleri çalışmaya dahil edildi. 16 dedektörlü BT cihazı ile elde edilen görüntüler Olea Sphere programı ile segmente edildi. İntratümöral, rim ve peritümöral olmak üzere üç ayrı segmentasyon yapıldı. Segmentasyondan elde edilen texture analiz verileri genetik değişiklik(ALK gen rearranjmanı, EGFR mutasyonu, wild tip), uzak metastaz ve mediastinal lenf nodu metastazı durumuna göre değerlendirildi.

Bulgular:EGFR mutasyonu olan lezyonların intratümöral texture parametreleri dışında değerlendirilen tüm parametrelerde genetik değişiklik, uzak metastaz ve mediastinal lenf nodu metastazı ile ilişkili texture analiz parametreleri saptanmıştır. Bu texture analiz parametrelerinde $p<0.001$ şartını sağlayan ve düşük p değeri saptanan texture analiz parametreleri ile lojistik regresyon analizi yapıldı. Her üç segmentasyon verileri kullanıldığı lojistik regresyon analizinde genetik değişiklik uzak metastaz ve lenf nodu metastazı saptama ayırım gücü değerlendirildi. Oluşturlan modelin ALK rearranjmanını saptama oranı %57,1 EGFR mutasyonunu saptama oranı %76,9 wild tip tümörleri saptama oranı %100 uzak metastazı saptama oranı %97,1 mediastinal lenf nodu metastazını saptama oranı %96,9 hesaplandı.

Sonuç: Çalışmamız akciğer adenokarsinomlarında intratümöral ve iki ayrı peritümöral alandan elde olunan texture analiz verileriyle genetik mutasyonu ve mediastinal lenf nodu metastazını değerlendiren ilk çalışmadır, uzak metastazı ise bu yöntemle değerlendiren sınırlı sayıdaki çalışmalardan biridir. İntratümöral texture

analiz verileriyle peritümöral alandan elde olunan texture analiz verilerin birlikte değerlendirilmesiyle,genetik değişiklikleri, uzak metastazı ve mediastinal lenf nodu metastazını öngörmede umut vadedici sonuçlar elde edilmiştir.

Anahtar Kelimeler: Akciğer kanseri, Mutasyon, Radiomics; Texture Analiz

ABSTRACT

Aim: In this study, we aimed to determine and discuss the diagnostic value of texture analysis data extracted from intratumoral and peritumoral parenchymas in predicting mutational alteration, mediastinal lymph node and distant metastasis in lung adenocarcinomas.

Material and Method: Pre-treatment computed tomography images of 45 patients aged between 18-99 years, whose mutational and clinical information could be accessed, were included in the study. Images obtained with a 16-detector CT device were segmented, Olea Sphere software used for segmentation. In this study three segmentation performed which are intratumoral, rim and peritumoral parenchyma. Texture analysis datas extracted from three different segmentations were evaluated according to genetic alterations (ALK gene rearrangement, EGFR mutation, wild type), distant metastasis and mediastinal lymph node metastasis.

Results: Statistically significant relations were observed between genetic alterations, distant metastatisis, mediastinal lymph node metastasis and texture analysis datas except for intratumoral texture parametersof lesions with EGFR mutation. Logistic regression analysis was performed with texture analaysis parameters that met $p<0.001$ condition and determined lower p values. In the logistic regression analysis which using three segmentation datas, the discrimination power of genetic alteration, distant metastasis and lymoh node metastasis were evaluated.The prediction accuracy of the statical model was calculated as %57,1 for ALK gene rearrangement, %76,9 for EGFR mutation, %100 for wilt type tumors, % 97,1 for distant metastasis and %96,9 for mediastinal lymph node metastasis.

Conclusion: Our study is the first to evaluate genetic alteration and mediastiastinal lymph node metastasis in lung adenocarcinomas with texture analysis data extracted from intratumoral and two different peritumoral areas, also it is the one of the limited number of studies evaluating distant metastasis with this method. Evaluating the intratumoral and peritumoral texture analysis datas together, promising results were obtained in predicting genetic alterations, distant metastasis and mediastinal lymph node metastasis.

Key Words: Lung Cancer, Mutation, Radiomics;Texture Analysis

1. GİRİŞ VE AMAÇ

Akciğer kanseri en sık tanı konan kanserler arasında olmakla beraber kansere bağlı ölümlerde ilk sıradaki yerini korumaktadır. Tütün kullanımı akciğer kanseri için en önemli predispozan faktör olup toplumda tütün kullanımına bağlı akciğer kanseri insidansı zamansal paralellik göstermektedir [1, 2]. Tütün kullanımıyla beraber akciğer kanseri görülme sıklığı hasta yaşı, cinsiyeti, ırk, coğrafya ve sosyoekonomik durumdan etkilenmektedir [3].

Akciğer kanseriküçük hücreli akciğer kanseri (KHAK) ve küçük hücreli dışı akciğer kanseri (KHDAK) olarak iki ana grupta incelenmektedir[4]. KHAK nöroendokrin hücrelerden gelişen ağırlıklı olarak santral yerleşimli ve sigara ile kuvvetli ilişkili olan subtipidir. KHDAK ise adenokarsinom, skuamoz hücreli karsinom ve büyük hücreli karsinomu içeren heterojen tümör grubunu tanımlamaktadır[5].

KHAK tüm akciğer kanserlerinin %10-15'ini oluşturmaktadır. Kısa dublikasyon süresi, az diferansiasyon göstermesi ve yüksek gradeli olmasıyla kötü prognozludur. Erken evrede sıklıkla metastaz saptanmakla beraber hastaların çoğu ileri evrede tanı almaktadır[6].

KHDAKise %85 lik oran ile akciğer kanserlerinin büyük bölümünü oluşturmaktadır. En sık görülen alt tipleri adenokarsinom ve skuamöz hücreli karsinomdur[7]. Tüm akciğer kanserlerinde tütün risk faktörü olmakla beraber KHAK ve skuamöz hücreli kanserde tütün kullanım ilişkisi daha kuvvetlidir[8].

Akciğer kanseri moleküler açıdan heterojen bir hastalıktır, biyolojisini anlamak etkin tedavi geliştirilmesi için önemlidir.Süregelen çalışmalarda saptanan rearranjmanlar, mutasyonlar ve amplifikasyonlar hastalık için biyobelirteç haline gelmiş olup tedavi seçimi için vazgeçilmez olmuşlardır.Tedavinin yanı sıra bu biyolojik ve genomik değişiklikler akciğer kanseri sınıflamasındada kullanılmıştır [8, 9]. Genetik farklılıkların ortaya konmasıylayeni terapötik ajanlar tedavide kullanılmaya başlanmıştır. Özellikle ALK ve EGFR mutasyonu saptanan hastaların

tedavisinde hedefe yönelik ajanlar standart platin tabanlı kemoterapinin yerine geçmiştir[10-13].

ALK ve EGFR mutasyounun saptanmasında histopatolojik inceleme en sık kullanılan yöntemdir. Fiberoptik bronkoskopi, endobronsial ultrason, BT kılavuzluğunda perkütanöz biyopsi tümör dokusunun incelenmesi için tercih edilebilecek yöntemlerdir. Bu yöntemler kullanıcı bağımlı olup bazı durumlarda doku örneklemesi teknik nedenlerle yetersiz olmaktadır. Yine invaziv yöntemler oldukları için komplikasyon gelişme riskleri mevcuttur. Bunun yanı sıra akciğer kanseri histolojik olarak heterojenite göstermesi sebebiyle uygun teknik ile elde olunan doku örneklerinde gerekli mutasyon bilgisi saptanamama olasılığı mevcuttur[14, 15].

Bilgisayarlı tomografi akciğer kanseri tanısında evrelemede ve tedavi yanıtının değerlendirilmesinde en sık kullanılan görüntüleme modalitesidir. Bu özelliklerinin yanı sıra BT ile elde olunan görüntüler tümörün değerlendirilmesi için kantitatif değerler sağlamaktadır. Kantitatif değerlendirmede farklı teknikler kullanılmakla beraber sıklıkla tercih edilen yöntem texture analizidir (TA) .TA diagnostik görüntülerdeki piksel intensitesi ve uzaysal dağılımlarını farklı matematiksel algoritmalarla değerlendiren ve kantitatif değerler elde eden yöntemdir[16-18]. TA yöntemi akciğer nodüllerinde malignite tahmini,sağ kalım öngörüsü, prognoz ve tümör fenotipinin belirlenmesinde önemli veriler sağlamaktadır [19, 20].Beraberinde TA ve radiomics yöntemleri tümör genomunu ve mutasyonel durumu hakkında bilgi sağlayabilir [21, 22].Ayrıca tümörün lenfovasküler ve hava yolu aracılığıyla akciğer parankimine yayılması ve patolojik olarak kanseröz hücrelerin parankimde saptanması radiomics çalışmalarının ilgi alanına girmiştir [23, 24].

Tedavi öncesi BT görüntülerinden sağlanan tümöre yönelik TA verilerinin tümör mutasyon durumuna göre farklılıklar göstereceğini öngörmekteyiz. Yine tümör etrafındaki normal akciğer dokusuna yönelik TA değerleri mutasyonel duruma göre farklılık gösterebilir ve bu TA değerleri ile uzak metastaz arasında ilişki olabilir. Bu çalışmada lezyonlardan ve çevre parankimden elde olunan BT temelli TA verilerinin tanısal alandaki farklılıklarını ortaya koymayı amaçladık.

2.GENEL BİLGİLER

2.1 AKCİĞER KANSERİ

2.1.1 Epidemiyoloji

Akciğer kanseri 2018 yılında 2,1 milyon yeni vaka ve 1,7 milyon ölüm ile kanser insidansı ve mortalitesinde önde gelen yerini korumaktadır. Erkeklerde prostat kanseri ve kadınlarda meme kanserinden sonra en sık tanı konan kanser ve her iki cinsiyette de kansere bağlı ölümlerde ilk sırada yer alması öngörülmektedir [1, 25].

Akciğer kanseri görülme sıklığı başta tütün kullanımı olmak üzere yaş, sosyoekonomik düzey, cinsiyet ırk, coğrafya gibi faktörlerden etkilenmektedir[3]. Tütün kullanımına bağlı olarak akciğer kanseri oranları gelişmiş ülkelerde az gelişmiş ve gelişmekte olan ülkelere göre yüksektir ancak ülkelerin tütün kontrol politika ve kampanyalarına bağlı olarak gelişmiş ülkelerde genel insidans azalmaktadır[3, 26].

Akciğer kanseri her iki cinsiyette de en sık 70 yaş üzeri tanı almaktadır.Erkeklerde 40 yaş üzerinde ve kadınlarda 60 yaş üzerinde kansere bağlı ölüm nedenlerinin başında gelmektedir[27, 28]. Bununla beraber akciğer kanserlerinin %10'u 55 yaş altında görülmektedir Küçük hücreli dışı akciğer kanseri genç yaşta ve sigara içmeyen popülasyondadaha sık görüldüğü bildirilmiştir [29].

Tütün kullanımına yönelik gerçekleştirilen politikalar sayesinde akciğer kanseri görülme oranında azalmaya rağmen sigara içmeyenlerde akciğer kanseri görülme sıklığı artmıştır[30, 31].Sigara içmeyen tabiri hayatı boyunca 100' den az sigara içmiş hastaları tanımlamaktadır. Sigara içmeyen popülasyondakadınlarda erkeklere göre akciğer kanseri görülme sıklığı daha fazladır. Bununla beraber sigara içmeyenlerde görülen akciğer kanseri biyolojik ve genetik farklılıklar göstermektedir. Küçük hücreli dışı akciğer kanseri (KHDAK) -özellikle adenokarsinoma subtipi- bu popülasyonda daha sıklıkla görülmekte ve ileri evrelerde

tanı almaktadır. Genetik farklılıkları ise ‘driver mutasyon’ olarak atfedilen başlıca 3 mutasyon oluşturmaktadır. Epidermal growth factor receptor (EGFR), Kirsten rat sarcoma viral oncogene homolog (KRAS) ve anaplastic lymphoma kinase (ALK) gen rearranjmanı bu mutasyonların başında gelmektedir. Tümörlerin genetik ve biyokimyasal farklılıklarının ortaya konması tipleme ve hedefe yönelik tedavilerin geliştirilmesinde önemli rol oynamıştır [32-34]. EGFR mutasyonu sigara içen hastalardaki akciğer kanserinde ve içmeyen popülasyona göre daha fazla saptanmakla beraber KRAS mutasyonu benzer oranda saptanmıştır [35, 36].

2.1.2 Risk Faktörleri

Sigara kullanımı akciğer kanseri risk faktörlerinin başında gelmektedir. Sigara dumanı 4000’den fazla kimyasal madde bulunmakla beraber bunların 50 den fazlasının karsinojen özelliği saptanmıştır[37, 38]. Tütün ve ürünleri kullanımının dışında, sigara dumanına ikincil maruziyet, yaş, cinsiyet ırk, coğrafya, sosyoekonomik düzey, hava kirliliği, uranium radium radon asbest maruziyeti, kronik akciğer hastalığı, enfeksiyonlar ve genetik yatkınlık diğer risk faktörleridir [3].

2.1.3 Klinik Bulgular

Kilo kaybı, ateş, halsizlik gibi sistemik belirtilerle beraber solunum sistemine ait öksürük, hemoptizi, nefes darlığı, hırıltılı solunum akciğer kanserinde sıklıkla görülen klinik bulgulardır. Bu bulguların yanı sıra tümörün kitle etkisine bağlı göğüs ağrısı, kemik ağrısı, süperior vena kava sendromu, yutma güçlüğü, apikal bölgelerde yerleşen tümörlerde ise Horner sendromu görülebilir.

Bu bulgularla beraber tümörün tipine bağlı olarak, ürettiği sitokinlerin, antikorların ve tümöre karşı oluşan immün yanıt sonucu paraneoplastik sendromlara yol açabilirler ve bu paraneoplastik sendromlar hastalığın erken evresinde görülebilirler. Sıklıkla görülen paraneoplastik sendromlar; hiperkalsemi, uygunsuz ADH sendromu, ektopik ACTH üretimi ve Lambert Eaton Sendromudur [4, 39, 40].

2.1.4 Akciğer Kanseri Sınıflaması

Akciğer kanseri Dünya Sağlık Örgütü' (DSÖ) nün yaptığı kalsifikasyona göre başlıca küçük hücreli akciğer kanseri ve küçük hücreli dışı akciğer kanseri olmak üzere iki ana gruba ayrılmaktadır. KHAK hastalığın en agresif formu olup tanı anında genellikle metastatiktir. KHDAK ise daha sıklıkla görülen kendi içerisinde heterojen bir grup hastalığı tanımlamakta ve adenokarsinom ve yassı hücreli karsinom bu grupta en sık görülen iki subtiptir[41]. DSÖ 2021 yılında tümör klasifikasyonunda revizyon yapmış olmakla beraber 2015 yılında yayınlanan sürümüne göre majör değişiklik olmamıştır[42].2021 yılındaki basımında başlıca farklılıklar; genetik sınıflamadaki yenilikler,nonmüsinöz akciğer lepidikadenokarsinomlarında TNM kalsifikasyonunun önemi, STATS (spread through airspace) farkındalılığı ve prognostik değerive nöroepitelyal neoplasmlar başta olmak üzere subtiplerde genişletmeye vurgu yapılmıştır [42].

Bununla beraber güncel kalsifikasyonda,spesifik genomik anomalileri içeren hastalarda EGFR ve ALK inhibitörlerinin kullanımı sonucuKHDAK mortalitesindeki azalmaya ve yeni keşfedilen hedefe yönelik tedavi imkânı sağlayan yeni driver genlere (ROS1, RET, NTKR1-3, BRAF, MET, ERBB2) büyük yer verilmiştir[42, 43].

Tablo 1: DSÖ 2021 Akciğer Tümörleri Sınıflaması [42]

Akciğer Nöroendokrin tümörleri	**Epithelial tumors**	
Prekürsör lezyon	**Papillomalar**	**Yassı Hücreli Prekürsör Lezyonlar**
Difüz Nöroendokrin hücre hiperolazisi	Yassı Hücreli Papillom, NOS	Yassı Hücreli karsinom in situ
Nöroendokrin Tümörler	Yassı Hücreli Papillom (inverted)	Hafif yassı hücreli displazi
Karsinoid tümör, NOS	Glandüler Papillom	Orta yassı hücreli displazi
Tipik karsinoid/garde 1	Yassı Hücreli ve Glandüler Papillom (mixt)	Şiddetli yassı hücreli displazi
Atipik karsinoid/grade 2	**Adenomlar**	Yassı Hücreli Karsinomlar
Nöroendokrin karsinom	Sklerozan pnömositoma	Yassı Hücreli Karsinom, NOS
Küçük Hücreli Karsinom	Alveolar adenom	Keratinize yassı hücreli karsinom
Kombine Küçük Hücreli Karsinom	Papiller adenom	Nonkeratinize yassı hücreli karsinom
Büyük hücreli Nöroendokrn Karsinom	Bronşial adenom	Bazaloid yassı hücreli karsinom
Kombine Büyük Hücreli Nöroendokrin Karsinom	Müsinöz kistadenom	Lenfoepitelyal yassı hücreli karsinom
Ektopik Doku Tümörleri	Müköz gland adenom	**Büyük hücreli karsinomlar**
Melanoma	**Prekürsör Glandüler Lezyonlar**	Büyük hücreli karsinom
Menenjiom	Atipik adenomatöz Hiperplazi	**Adenoskuamöz karsinomlar**
Mezenkimal Tümör	Adenokarsinom in situ	Adenoskuamöz karsinom
Akciğer Hamartomu	Adenokarsinom in situ non- müsinöz	Sarkomatoid karsinom
Kondroma	Adenokarsinom in situ ,müsinöz	Pleomorfik karsinom
Difüz Lenfanjiomatosis	Adenokarsinom	Dev hücreli karsinom
Pulmoner Blastoma	Minimal invaziv adenokarsinom	İğsi hücreli karsinom
Intimal sarcoma	Minimal invaziv adenokarsinom non-müsinöz	Pulmoner blastom
Konjenitla Peribronşial Myofibroblastik Tümör	Minimal invaziv adenokarsinom , müsinöz	Ckarsinosarkom
Pulmonary myxoid sarcoma with EWSR1-CREB1 fusion	İnvaziv nonmüsinöz adenokarsinom	**Diğer epitelyal tümörler**
PEComatöz Tümör	Lepidik adenokarsinom	NUT karsinom
Lenfanjioleiomyomatozis	Asiner adenokarsinom	TorasikSMARCA4-deficient andiferansiye tümör
PEComa, benign	Papiller adenokarsinom	**Tükrük bezi tipi tümörler**
PEComa, malign	Mikropapiller adenokarsinom	Pleomorfik adenom
Hemotolenfoid Tümörler	Solid adenokarsinom	Adenokistik karsinom
MALT lenfoma	invaziv müsinöz adenokarsinom	Epitelyal-myoepitelyal tümör
Difüz Büyük B Hücreli Lenfoma NOS	Müsinöz ve nonmüsinöz adenokarsinom (mixt)	Mukoepidermoid tümör
Lenfomatoid Granülomatozis, NOS	Kolloid adenokarsinom	Hyalinize şeffaf hücreli tümör
Lenfomatoid Granülomatozis, grade 1	Fetal adenokarsinom	Myoepitelyoma
Lenfomatoid Granülomatozis, grade 2	Enterik tip adenokarsinom	Myoepitelyal karsinom
Lenfomatoid Granülomatozis, grade 3	Adenokarsinom, NOS	
İntravasküler Difüz Büyük B Hücreli Lenfoma		
Langerhans Hücreli Histiyositozis		
Erdheim–Chester Hastalığı		

2.1.5 Akciğer Kanseri Evrelemesi

Akciğer kanseri KHAK ve KHDAK olmak üzere iki ana başlık altında histolojik tiplendirilmekte beraber evreleme TNM sistemine göre yapılmaktadır. Tanı anındaki evreleme en önemli prognostik faktördür[44]. KHAK ve KHDAK evrelendirmesinde farklılıklar mevcuttur.

2.1.5.1 KHAK Evrelemesi

KHAKhastalık derecesine göre sınırlı hastalık ve yaygın hastalık olarak sınıflandırılmaktaydı (Tablo 2) ancak KHAK' nin evrelemesinde AJCC TNM sisteminin 8. sürümünün kullanılması önerilmektedir[45].

Tablo 2: KHAK evrelemesi[45]

Sınırlı Hastalık	**Yaygın Hastalık**
Primer tümör ile aynı tarafta hiler lenfadenopati Aynı veya karşı taraf supraklaviküler veya mediastinal lenfadenopati Atipik hücre içermeyen plevral sıvı	Karşı akciğer metastazı Karaciğer, kemik, beyin metastazı Plevral sıvıda malign hücre

2.1.5.2 KHDAK Evrelemesi

KHDAK evrelemesinde tümör özellikleri lenf nodu tutulumu ve metastaz durumunun değerlendirildiği, üç özelliğin baş harfleri ile kısaltılan TNM evreleme sistemi kullanılmakta olup en son AJCC tarafından 2017 yılında güncellenmiştir [46]. Evre tanımlayıcıları Tablo 3 Tablo4 ve Tablo 5'te özetlenmiştir.

Tablo 3:T evresi tanımlayıcıları[46]

Tx		Balgam ya da bronşiyal yıkama sıvısında malign hücrelerin gösterildiği fakat tümörün bronkoskopi veya görüntüleme yöntemleri ile saptanamadığı durum
T0		Primer tümöre ait kanıtı yok
Tis		Karsinoma in situ
T1		En geniş çapı ≤3cm, Parankim ve visseral plevra ile çevrili Ana bronş tutulumu olmayan
	T1mi	Minimal invaziv adenokarsinom
	T1a	Tümörün en geniş çapı ≤1 cm
	T1b	Tümörün en geniş çapı >1 cm, ≤2 cm
	T1c	Tümörün en geniş çapı >2 cm, ≤3 cm
T2		Tümörün en geniş çapı >3 cm, ≤5 cm Karina tutulumu olmayan (karniya uzaklığından bağımsız) Viseral plevra invazyonu Hiler uzanıma bağlı ateletazi yada obstrüktif pnömoni eşlik edebilir
	T2a	Tümörün en geniş çapı >3 cm, ≤4 cm
	T2b	Tümörün en geniş çapı >4 cm, ≤5 cm
T3		Primer tümörle aynı lobda satellit nodül Tümörün en geniş çapı >5cm, ≤7 cm Göğüs duvarı frenik sinir, pariyetal perikard invazyonu yapmış herhangi boyuttaki tümör
T4		Tümörün en geniş çapı >7 cm Diyafragma, mediasten, kalp, büyük damarlar, trakea, rekürren laringeal sinir, özefagus, vertebra korpusu, karina invazyonu yapmış herhangi boyuttaki bir tümör Primer tümörle aynı akciğerde fakat farklı lobda nodül/nodüller

Tablo 4:N evresi tanımlayıcıları[46]

N1	İpsilateral peribronşiyal veya hiler lenf bezlerine veintrapulmoner lenf bezlerine metastaz
N2	İpsilateral mediastinal veya subkarinal lenf bezlerine metastaz
N3	Kontralateral mediastinal, hiler,veya ipsilateral veya kontralateral skalen veya supraklaviküler lenf bezlerine metastaz

Tablo 5:M evresi tanımlayıcıları[46]

M0		Uzak metastaz yok
M1		Uzak metastaz var
	M1a	Karşı akciğerde metastatik nodül/ nodüller, plevral veya perikardiyal metastatik nodüller, malign efüzyon
	M1b	Tek bir ekstratorasik organda, tek metastaz
	M1c	Bir veya birden çok organda multipl ekstratorasik metastaz

2.1.6 Akciğer Kanserinde Görüntüleme

Görüntüleme akciğer nodüllerinin ve kitlelerinin saptanmasında, malign ve benign ayırımının yapılmasında, akciğer kanseri evrelemesi, rezektabilite değerlendirmesi, tedaviye yanıtın değerlendirmede anahtar rol oynamaktadır. Dijital röntgen, bilgisayarlı tomografi (BT), manyetik rezonans görüntüleme (MRG)-difüzyon ağırlıklı görüntüleme (DAG), pozitron emisyon tomografi/ bilgisayarlı tomografi (PET/BT) gibi görüntüleme modaliteleri ile akciğer lezyonlarının morfolojik ve metabolik karakterizasyonları yapılabilmektedir [47].

Göğüs radyografisi,nodüllerin saptanmasında duyarlılık özgüllük ve pozitif prediktif değeri düşük olarak bildirilse deakciğer hastalıklarınıdeğerlendirmede ilk tercih edilen yöntemdir[47, 48]. Pulmoner lezyonlarda ve nodüllerde kalsifikasyon varlığı büyük olasıklıkla lezyonun benign süreçlere ait olduğunu göstermekle beraber iki yıl takip sürecinde grafide nodül boyutunda artış olmaması en önemli kriterdir[49].Pulmoner lezyonda ya da nodülde malignite şüphesi mevcut ise BT ile ileri tetkik edilmelidir[50].

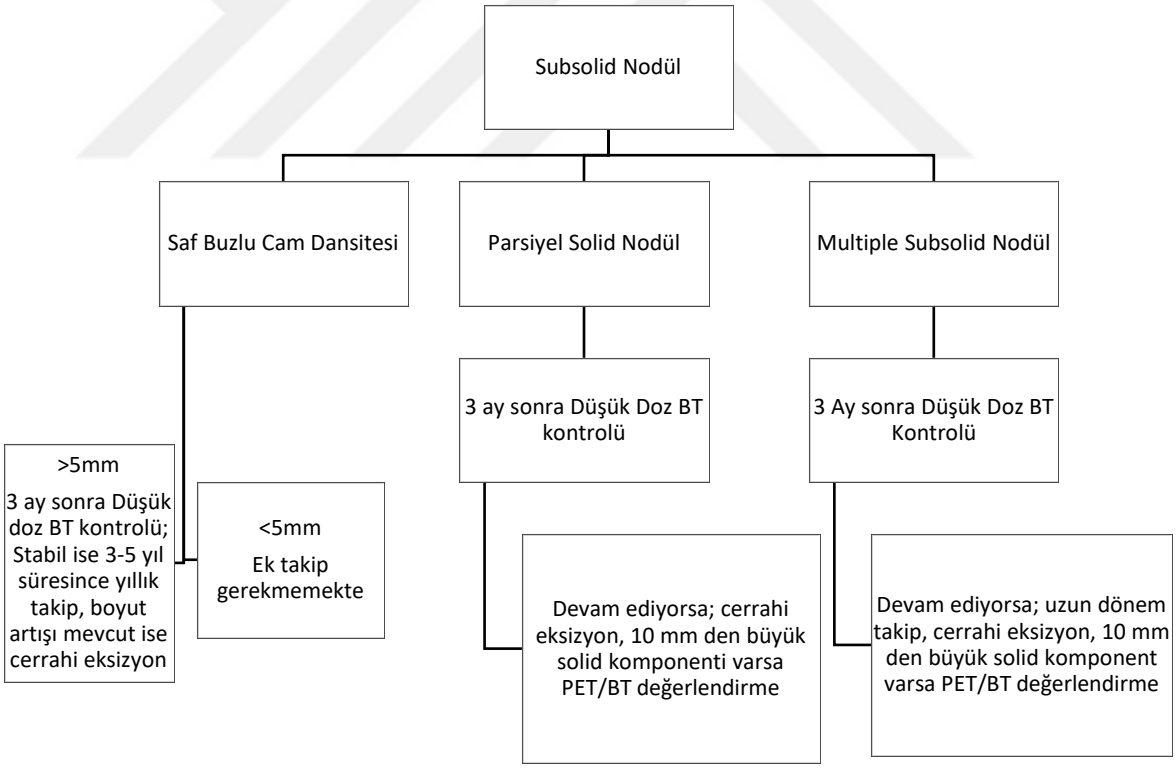
BT şüpheli bir akciğer tümörünü değerlendirmek için en iyi görüntüleme modalitesidir, lezyonların sınırlarını ve iç yapısını karakterize etmede radyografiye göre daha üstün bir yöntemdir[51].Lezyon karaketerizasyonu yanı sıra yüksek riskli grupların düşük doz bilgisayarlı tomografi ile taranması kansere bağlı ve genel mortalite oranlarında düşüşe neden olmuştur ve taramada radyografiye üstündür[52].

BT görüntüleme bulguları ve akciğer kanseri alt tipleri arasında morfolojik olarak korelasyon mevcuttur.

KHAK sıklıkla santral yerleşimliolup vakaların büyük çoğunluğunda mediastinal ve hiler lenfadenopati ile kendini gösterir ve direkt grafide kendini mediasten genişlemesi olarak gösterir. BT görüntüleme ise santral yerleşimli tümörü ve lenf nodu tutulumunu en iyi gösteren yöntemdir. Ayrıca santral yerleşimli olması sebebi ile vasküler invazyon sonucu süperior vena kava sendromuna yol açabilir. Bununla beraber bronşial invazyon ile parsiyel ya da total atelektaziye yol açabilirler. [53-55].

KDHAK ise başlıca adenokarsinom ve squamöz hücreli karsinom olmak üzere birçok subtipi tariflemektedir, subtiplere göre görüntüleme bulgularında ayırt edici farklılıklar saptanmıştır.

Adenokarsinom ise sıklıklar periferal-subplevral yerleşimli nodül olarak prezente olmaktadırlar. Buna bağlı olarak plevral retraksiyon önemli görüntüleme bulguları arasındadır [56]. Lezyon kenarları düzenli irregüler spiküle olabildiği gibi lezyonlar yumuşak doku atenüasyonunda ya da buzlu cam atenüasyonunda da olabilir. Pulmoner adenokarsinomun erken teşhisi, yanlış tanıdan kaçınmak ve cerrahi tedavinin gecikmesini önlemek için pulmoner nodüllerestandart bir yaklaşım geliştirilmiştir. Bu bağlamda subsolid ve solid nodüllerin ayırımı ve nodüllere yaklaşım adenokanser için önemli bir noktadır. İnvaziv adenokanserler buzlucam dansitesinde solid ve subsolid karakterde karşımıza çıkabilmektedir.[57-59]. Subsolid nodüllere yaklaşım Şekil 1'de özetlenmiştir.



Şekil 1: Subsolid nodüllere yaklaşım [58]

MRG' nin akciğer kanserinde birincil kullanım alanı yumuşak dokuyu daha iyi göstermesi sebebiyle göğüs duvarı, kardiyak invazyonu ve brakial pleksus tutulumunu değerlendirmedir[60]. Bunula beraber tedavi yanıtı değerlendirme için dinamik kontrastlı MR perfüzyon çalışmaları ve tedavi yanıtı ve lezyon karakterizasyonu için difüzyon ağırlıklı MRG çalışmaları mevcuttur [61, 62].

2.1.7 Doku Tanısı

Histolojik doku tanısı için günlük pratikte kullanılan birçok yöntem mevcut olup lezyon yerleşimine ve bulgulara göre en uygun yöntem seçilebilmektedir. Yöntemler ve avantajları Tablo 6'da özetlenmiştir.

Tablo 6: Akciğer kanseri doku tanısında kullanılan yöntemler[63]

Metod	**Yorum**
Erişilebilir lenf nodu yada metastaz biyopsisi- ince iğne aspirasyonu	Palpable lenf nodlarının değerlendirilmesinde uygundur
Konvansiyonel bronkoskopi fırçaları	Santral yerleşimli lezyonlarda periferal lezyonlara göre yüksek sensivite
BT klavuzluğunda transtorasik ince iğne aspirasyonu	Periferal lezyonlar için uygunküçük lezyonlarda düşük sensivite, pnömotoraks riski
Transbronşial iğne aspirasyonu	Santral yerleşimli lezyonlar için endike
Elektromanyetik navigasyon bronkoskopi	Periferal lezyonların tanısında gelişmiş yöntem, uygulayıcı becerisi ve eğitim dezavantajıdır
Endobronşial ultrason klavuzluğunda iğne aspirasyonu	Paratrakeal, subkarinal ve periferal nodların tanısı için en iyi seçenek, periferal lezyonlarda düşük sensivite
Plevra biyopsisi	Negatif plevral sitoloji bulguları mevcut ise endikedir
Balgam sitolojisi	Santral yerleşimli lezyonlarda endikedir, negatif sonuçlanırsa takip tetkik önerilmektedir.
Plevral sıvı sitolojisi	Plevral sıvı varlığında kullanılabilir, ultrason rehberliğinde yapılır, pnömotoraks riski azalmıştır, ikinci örnekleme tanısal veriömi artırır
Video yardımlı cerrahi	Küçük, yüksek riskli nodüllerin tanısında kullanılır

Doku tanısında geleneksel yöntemlere ek olarak tanıya yardımcı olabilecek biyobelirteç çalışmalarıda gündeme gelmiştir. Bunlardan bazıları, kanda dolaşan serbest DNA ve tumor DNA ve yine periferal kanda çalışılan CYFRA21-1, CEA, NSE, SCC-ag en sık çalışmış ve literatürün ilgisini çekmiş antijenlerdir [64].

2.1.8 Akciğer Kanserinde Tedavi

KHAK ve KHDAK kanseri tedavi yaklaşımları farklılık göstermektedir, histolojik alt tiplerinin sınıflandırılması tedavi planlamasında önemli rol oynamaktadır.

KHAK kanseri tedavisinde cerrahi yöntemler vakaların %2-5 gibi küçük bir kısmında kullanılmaktadır. Cerrahi tedaviTNM evre 1 hastalıkta mediastinal ve supraklaviküler lenf nodu metastazı olmayan hastalardatercih edilebilmektedir [65]. İleri evre hastalıkta ise platin temelli kemoterapi(sisplatin+etopozid) birinci sıra tedavi yöntemidir. Tedavilere ek olarak toraks radyoterapisi ve profilaktik kranial radyoterapi tüm hastalara önerilmektedir[66]. Moleküler çalışmalar sonucunda platin bazlı kemoterapiye ek olarak ikinci sıra kemoterapi ajanları geliştirilmiştir. İmmünoterapi ve hedefe yönelik ajanlardan birkaçı CTLA-4 monoklonal antikoru, PD-L1 inhibitörleri, PARP inhibitörleri, tirozin multikinaz inhibitörleri olup tedavide umut verici ajanlarlardır[67].

Cerrahi rezeksiyon evre 1 evre 2 evre 3Aerken evre KHDAK' lerinde tercih edilebilen tedavi yöntemidir. Evre 2 ve3A hastalıkta platin temelli adjuvan kemoterapi önerilmektedir[68]. Evre 3 KHDAK'li hastaların çoğu cerrahiye aday olmayan hastalardır ve mevcut tedavi protokolü kemoterapi ve eş zamanlı immünoterapidir[69]. Hedefe yönelik tedavi ileri evre KHDAK'li hastaların önemli bir kısmında klinik sonuçları iyileştirmiştir. Bu nedenle tedavi seçiminde geniş panel moleküler testler önerilmektedir. EGFR, ALK, ROS1,RET, BRAF, MET exon14, NTRK genetik değişiklikleri hedefleyen tirozin kinaz inhibitörleri KHDAK subtipleri için tedavi onayı almıştır[70].

2.2. RADİOMİCS- TEXTURE (DOKU) ANALİZİ

Görüntüleme onkolojik uygulamada lezyon tespiti, karakterizasyonu, tanı doğrulaması, evreleme, tedavi planı ve tedaviye cevap değerlendirme için kullanılmaktadır. Evreleme lezyonun anatomik görünümüne ve ve görüntülemedeki yayılım durumuna göre değerlendirilmektedir. Tümör tipine göre görüntüleme modaliteleri tek başına ya da kombinasyonlar şeklinde tümör değerlendirmesinde kullanılmaktadır. Mevcut tüm görüntüleme yöntemlerinde ortak olan kısıtlayıcı faktör değerlendirmenin tamamen görsel sürece dayalı olmasıdır, her modalitede HU (Hounsfield unit) SI (signal intensity) SUV (standardized uptake value) gibi kantitatifparametreler nicel analizi yapılmakta ancak tipik olarak tümörün uzaysal dağılımını tam anlamıyla tanımlayamamaktadır. Her görüntü içerisinde çıplak gözle kolayca algılanamayacak özellikler mevcuttur[71].

Tümörler, hücresellik, anjiyogenez, ekstravasküler hücre dışı matriks ve nekroz alanlarında tümör içi uzaysal varyasyon ile hem genetik hem de histopatolojik seviyelerde heterojenite göstermektedirler. Yüksek intratümoral heterojenite gösteren tümörler agresif seyirli ve tedaviye dirençlidirler. Tümörlerin rastgele örneklenmesi doku tanı düzeyinde ve klasik görüntüleme yöntemleri bu heterojeniteyi değerlendirmede yetersiz kalmaktadır. Bu nedenle texture analizi (TA) gibi noninvaziv, tümör heterojenitesini değelendiren yöntemlere ilgi artmıştır [71-73].

TA radiomics çalışmalarının bir parçasıdır. Görüntülerdeki piksel veya voksellerdeki gri seviyelerin, görüntü uzayında dağılımını ve birbirleriyle ilişkisine göre tümör hetorejenitesini kantitatifve objektif olarak değerlendiren bir yöntemdir. TA'da kullanılan metodlar model bazlı istatistiksel bazlı, dönüşüm bazlı ve yapısal bazlı metodlar olmakla birlikte en sık kullanılan metod istatistiksel bazlı olandır [74].Radiomics algoritmaları sonunda makine öğrenimine uzanabilen birbirini takip eden basamaklardan oluşmaktadır, bunlar; görüntü elde olunması,veri ön hazırlığı, segmentasyon, radiomics özelliklerinin çıkarımı ve seçilmesi en son basamak ise veri analizidir [75].

2.2.1 Görüntü Elde Edilmesi

Görüntü elde edilmesi radiomics algoritmasının ilk basamağını oluşturmaktadır. Bu basamağın en büyük zorluğu radyasyon dozu, tarama protokolü, redüksiyon algoritması ve kesit kalınlığı dahil olmak üzere görüntülerin oluşturulduğu parametrelerdeki geniş varyasyonlardır[75].

2.2.2 Veri Ön Hazırlığı

Bu basamağın amacı elde olunan verilerdeki gürültünün azaltılmasıdır. Ölçüm alanındaki mevcut yüksek frekanslı gürültünün giderilmesi için dijital-adaptif filtreler kullanılabilir [76].

2.2.3 Segmentasyon

Bu basamak tümörün tamamını ya da tümörün ilgilenilen bölgesini (ROI) tanımlamaktır. Keskin kenarlı solid lezyonlarda tümör segmentasyonu görece kolaydır ancak kenar tanımlaması net olmayan örneğin buzlu cam dansitesi içeren lezyonlarda, segmentasyon daha zor hale gelmektedir. Segmentasyon işlemi manuel, yarı otomatik ve tam otomatik olarak yapılabilmektedir. Altın standart ise konunun uzmanı tarafından yapılan manuel segmentasyon olmakla beraber lezyonun manuel segmentasyonu son derece zaman alıcıdır [77].

2.2.4 Radiomics Özelliklerinin Çıkartılması ve Seçimi

Radiomics özelliklerinin onkoloji alanına dahil edilmesi lezyonların kantitatif değerlendirlerek lezyon karakterizasyonunda, prognoz tahmininde fayda sağlamakla beraber çıplak gözle tespit edilemeyen tümör biyolojisini yansıtan bilgileri nesnel olarak ortaya çıkarabilmektedir. Segmente edilen volümden bilgisayar destekli yazılımlar ile istatistiksel, filtreleme ve morfolojik yöntemlerleradiomics özellikleri elde edilmektedir. Radiomics özellikleri çıkardıktan sonraki adım ise bu özelliklerin klinik değerlerini saptamaktır[78].

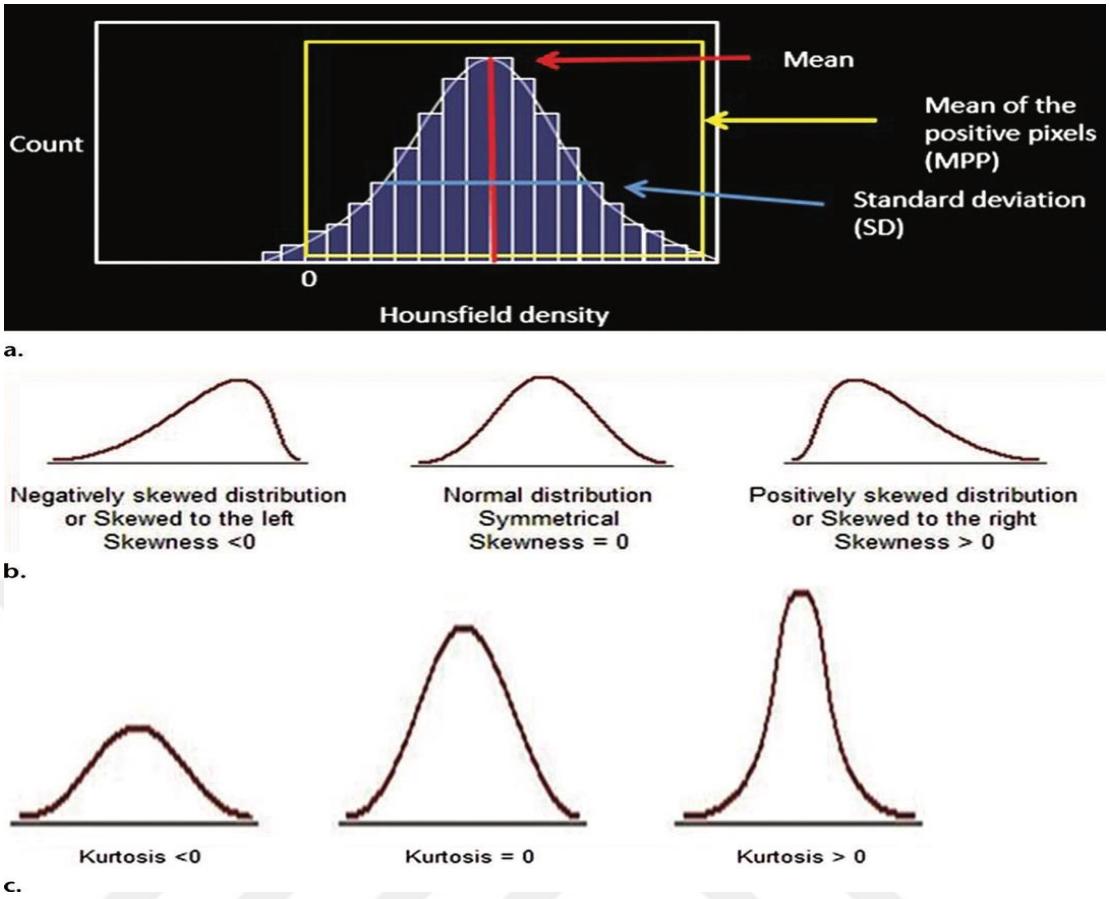
Morfolojik özellikler tümörün fiziki özellikleri yani tümörün şekli ve hacmi ile ayrıntılı bilgi sağlamaktadır[75].

Filtreleme yöntemlerindeki temel amaç ise görüntüdeki piksel değerlerinin doğrusal ve doğrusal olmayan dönüşümlerinin bulunup istatistiksel analizinin yapılmasıdır. Çalışmalarda genellikle spasyal filtreleme yöntemleri kullanılmaktadır. Laplacian- Gaussian filtresi çevre alandan gelen kenar özelliklerini geliştiren filtreleme tekniğdir. Tümör ve çevre doku hakkında analiz yaparak tümör kenar karekterizasyonu ile ilgili kantitatif bilgiler sağlar [75, 78].

İstatiksel yöntemlerle hesaplanan özellikler ise birinci derece istatistiksel özellikler (histogram) ikinci ve yüksek derece istatistiksel(doku) özellikler olarak sınıflandırılmaktadır [79].

2.2.4.1 Birinci Derece İstatistiksel Özellikleri (Histogram Analizi)

Birinci derece istatistiksel analiz parametreleri belirlenen alanın gri seviye dağılımı dağılımını ölçer. Temeli histogram olup histogramda tanımlanan lezyon içi piksel aralığını ve frekansını tanımlar. Ancak piksellerin konumunu ve çevre pikseller hakkında bilgi vermez. Görüntünün minimum, maksimum, ortalama, standart sapma, enerji, varyans, entrophy (düzensizlik, rastgelelik), uniformity (benzer şekillilik), kurtosis (piksel histogram yassılığı) ve skewness (çarpıklık, asimetri) gibi gri seviyelerinin dağılımı ile ilgili kantitatif parametreleri ölçer. Birinci derece istatistiksel parametrelerden en sık kullanılanlar kurtosis ve uniformity'dir. Eğer tüm piksellerde gri seviye değerleri eşit ise uniformity maksimumdur ve homojenliğin belirtecidir. Eğer görüntüdeki bir piksel için her bir gri gri seviye intensitesinde olma ihtimali eşitse uniformity maksimum olup heterojenite göstergesidir[74, 80].



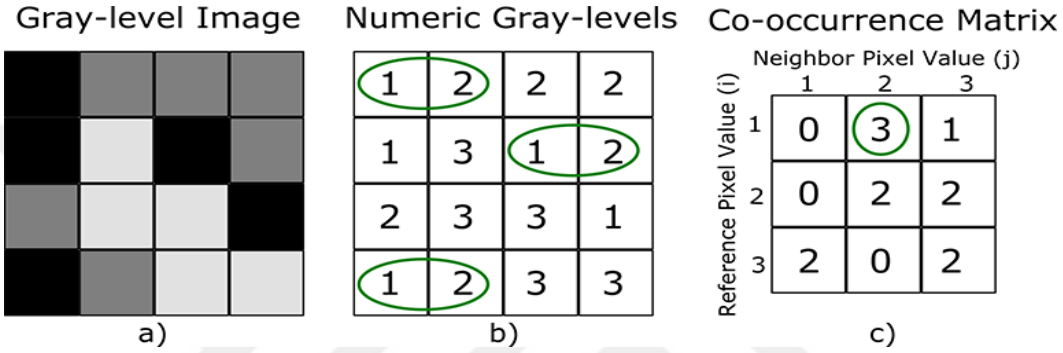
Resim 1: Birinci derece istatistiksel tabanlı BT texture parametreleri. (a) X eksenin olduğu olduğu piksel histogramının grafiği gri seviye değerleri ve zayıflamayı temsil eder, Y ekseni oluşma sıklığını temsil eder. Birinci derece parametreler histogramın ortalama ve ya gri seviye yoğunluğunu(dikey kırmızı çizgi)i histogramın standart sapmasını (yatay mavi çizgi) ve pozitif piksellerin (MPP) ortalamasını (sıfır eşiğiyukarısındaki ortalama gri seviye yoğunluğu) (sarı kutu) içerir. (b) Örnek skewness histogramları: çarpık değerler sıfırdan küçük olduğunda negattif (solda) ve sıfırdan büyük olduğunda (sağda) pozitiftir. (c) Kurtosis piksel histogramının sivriliği veya basıklığını gösterir. Bir ve ya daha fazla sivri uçlu histogram pozitif ve giderek daha yüksek basıklık değeriyle görülüyor (sağda) [74].

2.2.4.2 Yüksek Derece İstatistiksel Özellikleri

Yüksek derece istatistiksel parametreler vokselleri değerlediriken beraberinde diğer voksellerle olan istatistiksel ilişkiyi de inceler. Gray level co-occurence matrix (GLCM), gray level run length matrix (GLRLM) ikinci derece, neighborhood gray tone difference matrix (NGTDM) ise ileri derece istatistiksel ölçüm olup yüksek derece istatistiksel özelliklerin başlıcalarıdır [74].

2.2.4.2.1 Gray Level Co-occurence Matrix (GLCM)

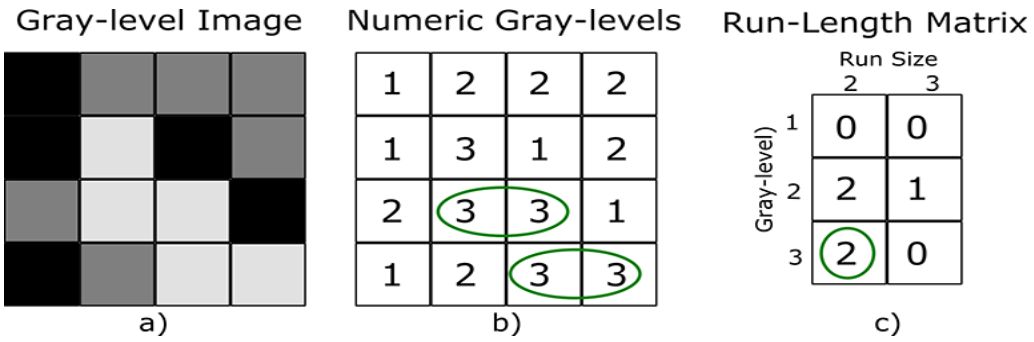
Görüntüdeki ya da ROI'deki voksel veya piksel çiftleri arasındaki ilişkiyi değerlendirir. GLCM görüntüdeki gri düzey kombinasyonunun sayısı, mesafesi ve açısı kullanılarak oluşturulur. GLCM ile küme, korelasyon, enerji ve ikinci düzey entropy, uniformity, toplam entropy, varyans, kontrast, homojenite özellikleri elde edilebilir. GLCM ölçümleri iki boyutlu görüntülerde 0, 45, 90 ve 135 olmak üzere dört farklı açı boyunca yapılır[74, 81, 82].



Resim 2: Gray level co-occurens matrix hesaplanmasının diyagramı. Üç griseviyeli piksel matiksi (a)ve gri seviyelere karşılık gelen numerik gri seviye matriksi (b) gösterilmektedir. Soldan sağa horizontal yapılan hesaplama sonucu co-occurens matriksi izlenmekte (c). Co- occurens matrikste dikey sütun referans, yatay sütun ise komşu piksel değerlerini tanımlamaktadır. Referans değeri 1 komşu piksel değeri 2 alındığında tekrarlama sayısı çember içerisinde gösterilmektedir[82].

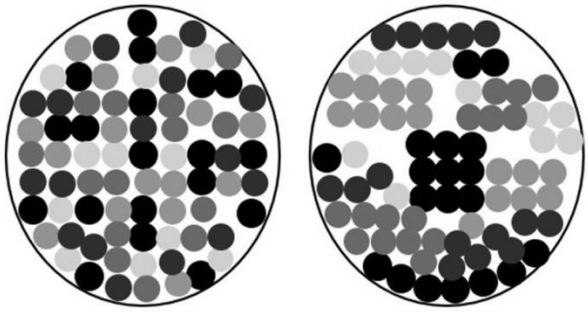
2.2.4.2.2Gray Level Run Lenght Matrix (GLRLM)

GLRLM gri seviyesi aynı olan voksel ya da piksellerin herhangi bir yönde aralıksız ne kadar devam ettiğini hesaplar. GLRLM ile long run emphasis, short run emphasis, gray level non-uniformity, run percantege gibi parametreler elde olunur. Ölçümler ise iki boyutlu görüntülerde dört farklı, üç boyutlu görüntülerde ise 13 farklı açıdan yapılmaktadır [82].



Resim 3: Gray level run length matrix hesaplamasının diyagramı. Üç gri seviyeli piksel matiksi (a) ve gri seviyelere karşılık gelen numerik gri seviye matriksi (b) gösterilmektedir. Soldan sağa horizontal yapılan hesaplama sonucu elde olunan run length matriksi gösterilmektedir (c). Numerik gri seviye matriksinde, horizontal olarak soldan sağa 2 adet 3 gri seviye değerinde 2 piksel uzunluğunda seri izlenmektedir. Run length matrixte buna karşılık gelen çember içerisinde 2 piksel uzunluğunda toplam seri sayısı görülmektedir [82].

Birinci derece istatistiksel değerler ve ikinci derece istatistiksel değerlerin arasındaki en önemli fark, birinci derece değerler sadece piksel yoğunluğunu hesaba katarken piksellerin ilişkisini ve uzaysal konumu hakkında bilgi vermez, bu veriler ikinci derece- yüksek istatistiksel değerlerin hesaplanmasıyla elde edilir [74, 82].



Resim 4:İki farklı gri skala görüntü diyagramı gösterilmektedir. İki dairede eşit sayıda açık gri, orta gri, koyu gri ve siyah piksel içermektedir. İki farklı daire için, birinci derece özellikler ve piksel histogramları neredeyse aynı olacaktır. Fakat yüksek dereceli doku özellikleri dikkate alındığında piksellerin konumu ve birbiri ile ilişkisi farklı olduğundan GLCM ve GLRLM değerleri farklılık gösterecektir.Örneğin açık gri bir piksel ile siyah bir pikselin horizontal komşuluğu sağ dairede iki, sol dairede ise dört kez izlenmektedir. GLCM horizontal, vertikal ve oblik planda her bir pikselin komşuluk frekansını ölçer ve bu frekans pikseller arasındaki uzaysal ilişkiyi temsil eder şekilde haritalanmaktadır [74].

2.2.4.2.3 Neigborhood Gray Tone Difference Matrix (NGTDM)

Herhangi bir pikselin gri seviye değeri ile komşu piksellerin ortalama gri seviye değerlerinin farkının hesaplanmasına dayanan yüksek derece istatistiksel değerlerdir. NGTDM'den busyness, complexity, texture strength, coarseness gibi özellikler elde edilmektedir[72, 74].

3. MATERYAL VE METOD

3.1. ETİK KURUL ONAYI

Çalışmamız için, Sağlık Bilimleri Üniversitesi Dr. Abdurrahman Yurtaslan Onkoloji Sağlık Uygulama ve Araştırma Merkezi Girişimsel Olmayan Klinik Araştırmalar Etik Kurulu'ndan 2022-05/110 araştırma kodlu 26.05.2022 tarihli etik kurul onayı alınmıştır.

3.2. HASTA SEÇİMİ

Çalışmamızda Ocak 2019-Mayıs 2022 tarihleri arasında Radyoloji Bölümünde akciğer kanseri tanısı ile tetkik edilen 388 hastanınkontrastlı BT görüntüleri retrospektif olarak tarandı.

Çalışmaya dahil edilme kriterleri;

1- 18-99 yaş arasında olması
2- Hastanemiz PACS ve HBYS üzerinden tanı anındaki BT görüntülerine ve klinik ve mutasyon bilgilerine ulaşılabilmesi
3- Akciğer adenokanser tanısı almış olması

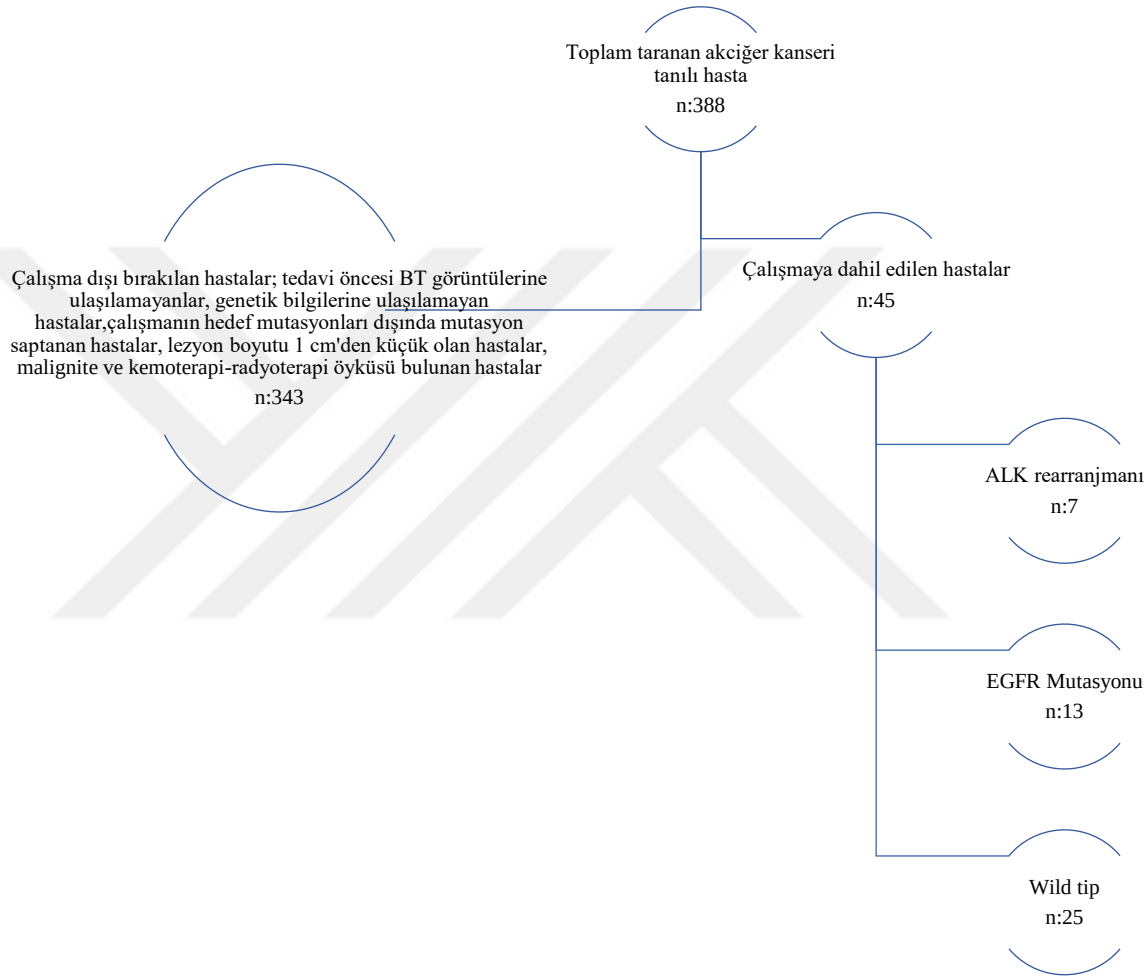
Çalışmadan çıkarılma kriterleri;

1- 18 yaşından küçük 99 yaşından büyük olması
2- Daha önce malign hastalıktanısı alması ve sistemik ya dalokal kemoterapi-radyoterapi gibi tedavilerden birini almış olan hastalar
3- Hastanemiz PACS ve HBYS sistemi üzerinden tanı anındaki görüntülere ya da klinik ve mutasyon bilgilerine ulaşılamayan hastalar
4- Çalışmamızın hedef mutasyonlarıyla beraber başka mutasyon saptanan hastalar ve hedef mutasyonlar dışında genomik farklılık saptanmış olması

5- 1 cm’den küçük lezyonlar

6- Lezyon sınırının atelektaziden ayrılamaması

Yukarıda tanımlanan kriterler göz önünde bulundurularak yapılan değerlendirme sonucu 388 hastanın 45’i çalışmaya dahil edilmiştir.



Şekil 2:Çalışmada hasta seçim protokolü

3.3. BT ÇEKİM PROTOKOLÜ

Hastaların kontrastlı toraks BT çekimleri 16 kesitli BTcihazı (GE Revolution, General Electric, Milwaukee, Wisconsin, USA) ve 16 kesitli BT cihazı (Toshiba, Aquilon, Toshiba Medical Systems, Tokyo, Japan) ile yapılmıştır. Kontrastlı toraks

BT çekim parametreleri; Voltaj 120 kVp akım otomatik belirlediği 100-500 arasında mAs kesit kalınlığı 1.25-5 mm, pitch değeri 1.5 olarak alınmıştır.

İntravenöz iyotlu kontrast maddenin otomatik enjektör pompası ile saniyede 3 cc enjeksiyonu sonrası toraks görüntüleme yapılmış olup görüntüler oluşturulurken mediasten ve pankim ön ayarları kullanıldı.

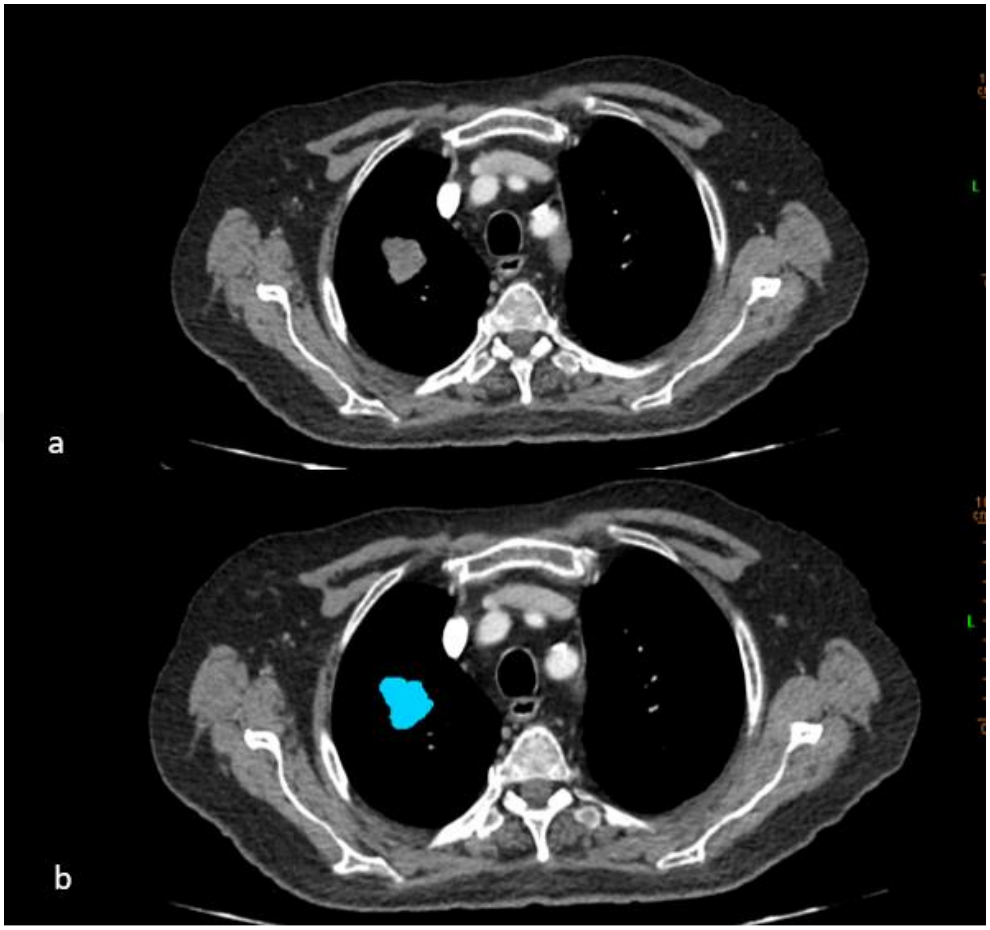
3.4. GÖRÜNTÜLERİN İŞLENMESİ

Hastane PACS sisteminden elde olunan görüntüler tek bir kullanıcıya ait Windows işletim sistemli kişisel bilgisayara yüklenmiştir.

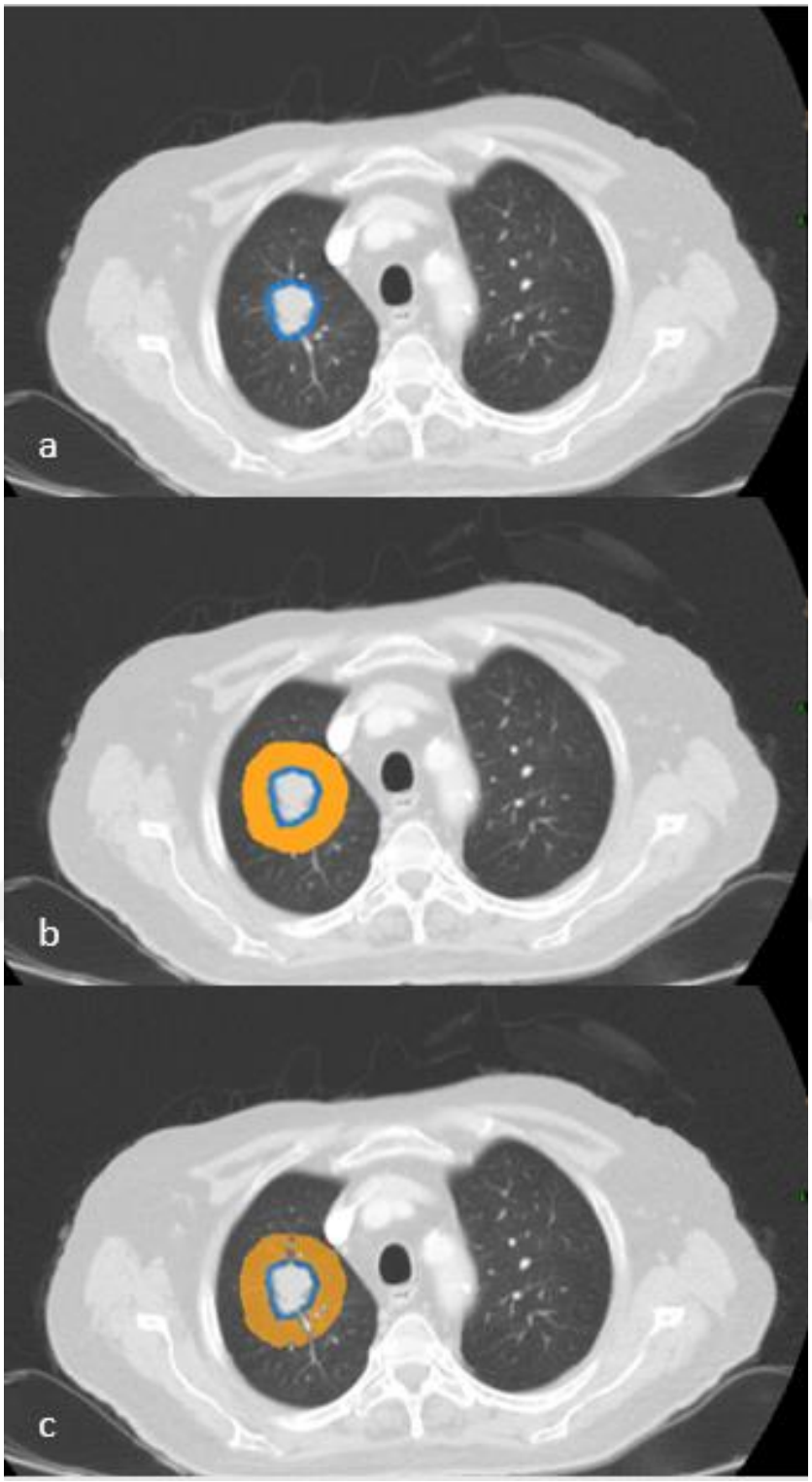
Elde edilen görüntüler Olea Sphere 3.0uygulaması kullanılarak 3 boyutlu segmentasyon işlemi yapılmıştır. Tümör segmentasyonu mediasten penceresinden yapılmış olup tüm kesitler manuel olarak 3D ROI(Region of Interest) ile işaretlenerek 3 boyutlu VOI (Volume of Interest) elde olunmuştur (Resim 5). Tümör segmentasyonunda tümöre ait kalsifikasyon alanları segmentasyona dahil edilirken, tümörün çevrelediği bronkovasküler yapılar segmentasyon dışı bırakılmıştır. Gögüs duvarı ve mediasten invasyonu olan lezyonlarda lezyondan emin olunan yerler segmentasyona dahil edilmiştir.

Peritümöral parankim segmentasyonu ise yine tüm kesitler manuel olarak 3D ROI ile işaretlenerek 3 boyutlu VOI elde olunarak yapılmıştır. Perilezyonel parankim 2 farklı segmentasyon ile değerlendirildi.İlk segmentasyon tümör sınırından itibaren 2 mm' lik alanı (0-2mm) kapsamaktadır ve lezyonu çevreleyen ince halka olması sebebiyle çalışmada 'rim' olarak adlandırılmıştır. Diğer perilezyonel segmentasyon ise rimden itibaren 10 mm'lik alanı (2-12 mm)kapsamaktadır ve çalışmada 'perilezyonel parankim' olarak adlandırılmaktadır. Perilezyonel parankim içerisindeki bronkovasküler yapılar segmentasyon dışı bırakılmıştır (Resim 6). Perilezyonel parankim segmentasyonu, mediasten ve göğüs duvarı komşuluğundaki lezyonlarda her zaman 10 mm kalınlığında işaretlenemedi. Mediastinal yapılar ve göğüs duvarıyla lezyonlar arasında parsiyel volüm etkisinden korunmak için 1-2 mm güven aralığı bırakılmıştır. Yine perilezyonel parankim segmente edilirken fissüre temas eden ve fissürün koruyucu bariyer görevi yaptığı tümörlerde fissür komşuluğundaki parankim segmentasyona dahil edilmedi.

Segmentasyon sonrası texture verileri Olea Sphere 3.0 programının Radiomics eklentisi ile elde olundu.



Resim 5: Mediasten penceresinde lezyon segmentasyonu Sağ akciğerüst lobda wild tiplezyonunmediasten penceresinde (a) ROI kullanılarak yapılan segmentasyonunun (b)gösterimi, lezyon segmente edilirken kontur özellikleri dikkate alınmıştır.



Resim 6: Akciğer penceresinden perilezyonel parankimlerin segmentasyonu. Sağ akciğer üst lobda wild tip lezyonun parankim penceresinde perilezyonel rim alanının (a) peritümöral parankimin (b) segmentasyonu gösterilmiştir. Her iki segmentasyon lezyonun şekline uygun yapılmış olup iki alan ve lezyon ile işaretlenen alanların çakışmamasına dikkat edildi. Perilezyonel alanların segmentasyonu sonrası vasküler yapılar manuel olarak segmentasyon dışı bırakıldı (c).

3.5. İSTATİSTİKSEL YÖNTEMLER

Değişkenlerin analizinde SPSS 25.0 (IBM Corporation, Armonk, New York, United States) ve R-4.0.2 programları kullanıldı. Verilerin normal dağılıma uygunluğu Shapiro-Wilk francia testi iledeğerlendirilirken varyans homojenliği Levene testi ile değerlendirildi. Bağımsız iki grubunnormal dağılım gösteren nicel değişkenlere göre birbiri ile karşılaştırılmasında Independent-Samples T testi Bootstrap sonuçlarıyla birlikte kullanılırken normal dağılım göstermeyendeğişenlerin analizinde ise Mann-Whitney U testi Monte Carlo sonuçlarıyla birlikte kullanıldı.Kategorik cevap değişkenin açıklayıcı değişkenlerle sebep – sonuç ilişkisini belirlemek içinlojistik regresyon testi Backward metodu ile R-4.0.2 programında lm fonksiyonu vasıtasi ileanaliz edildi. Nicel değişkenler tablolarda ortalama (standart sapma) ve Median (Minimum /Maximum) şeklinde ifade edilirken kategorik değişkenler ise n (%) olarak gösterildi. Değişkenler%95 güven düzeyinde incelenmiş olup p değeri 0.05 ten küçük anlamlı kabul edildi.

4.BULGULAR

4.1 HASTALARIN DEMOGRAFİK KLİNİK VE RADYOLOJİK DEĞERLENDİRMESİ

Çalışmaya 32-85 yaş aralığında45 hastanda toplam 45 lezyon dahil edilmiştir.Demografik, klinik ve radyolojik bulgular Tablo 7'de tanımlanmıştır.

Hastaların %28,8'i kadın (n:13), %71,2'si erkek (n:32) olup median yaşı 60'tır. Dahil edilen hastaların %62'sinde (n:28) sigara öyküsü mevcuttu. Mutasyonel duruma bakıldığında ise lezyonların %15,5'inde (n:7) ALK rearranjmanı, %28,8'inde (n:13) EGFR mutasyonu saptanmış olup %55,5'inde(n:25) hedef mutasyonlar saptanmamıştır (wild tip).Klinik ve radyolojik değerlendirmede hastaların %71'inde (n:32) mediastinal lenf nodu metastazı,%77'sinde (n: 35) uzak metastaz mevcuttu. Görüntülemede ise lezyonların %53'ü (n:24) spiküle kontur, %35'i (n:16) lobüle kontur, özelliğine sahip, %8'i (n:4) kavitasyon, %37'si hava bronkogramı, %17'si (n:8) kalsifikasyon içermekteykenbüyük çoğunluğu %68'i (n:31) plevraya indentasyon bulgusu göstermiştir.

Tablo 7: Hastaların demografik, klinik özellikleri ve radyolojik bulguları

Özellik	**Kategori**	**n**	**%**
Yaş	Bütün	45 Median yaş:60	100
Cinsiyet	Kadın Erkek	13 32	28,8 71,2
Sigara öyküsü	Var Yok	28 17	62 38
Mutasyon Durumu	ALK rearranjmanı EGFR mutasyonu Wild tip	7 13 25	15,5 28,8 55,5
Mediastinal Lenf Nodu Metastazı	Var Yok	32 13	71 29
Uzak Metastaz	Var Yok	35 10	77 23
BT Bulguları	Spikülasyon Lobülasyon Kavite Hava bronkogram Kalsifikasyon Plevral indentasyon	24 16 4 17 8 31	53 35 8 37 17 68

4.2 TEXTURE ANALİZ VERİLERİ

Çalışmaya dahil edilen her lezyon için intratümöral,rim ve peritümöral olmak üzere üç ayrı segmentasyon yapıldı.

Her segmentasyonda 17 adetşekil ve boyut parametresi, 19 adet birinci derece parametre,**gray level co-occrence matrix, gray level run length matrix, gray level size zone matrix (GLSZM), neigboring gray tone difference matrix (NGTDM) ve gray level dependence matrix(GLDM)** başlıkları altında 75 adet ikinci ve yüksek derece parametre olmak üzere toplam 111 texture analiz parametresi çalışmaya dahil edildi.

Her üç segmentasyonda (intratümöral, rim, peritümöral) elde olunan texture analiz parametreleri mutasyon durumu (ALK rearranjmanı, EGFR mutasyonu, mutasyon saptanmayan-wild tip), uzak metastaz ve mediastinal lenf nodu metastazı pozitifliği göz önünde alınarak değerlendirildi.

4.2.1 İntratümoral Texture Analiz Verileri Değerlendirmesi

ALK rerararanjmanı olan lezyonlarda intratümoral texture analiz parametreleri incelendiğinde; şekil ve birinci derece parametrelerden**Maximum 3D Diameter**parametresiortalama değeri (p=0.016), **Major Axis Length** parametresi ortalama değeri (p=0.006), **Standart Deviation**parametresi ortalama değeri (p=0.008), **Uniformity**parametresiortalama değeri (p=0.007)ALK rearranjmanı olmayan tümörlere göre daha düşük bulunmuş olup istatistiksel olarak anlamlı farklılık olduğu saptandı ($p<0.05$). Birinci derece **Total Energy**parametresi ortalama değeri (p=0.003), **Interquartile Range** parametresi ortalama değeri (p=0.038) ALK rearranjmanı bulunan lezyonlarda daha düşük bulunmuş olup istatistiksel olarak anlamlı fark saptandı ($p<0.05$)(Tablo 8).

İkinci ve yüksek derece parametreler incelendiğinde; **GLCM Difference Average**parametresiortalama değeri(p=0.002), **GLCM Inverse Difference Moment**parametresi ortalama değeri (p=0.034),**GLCM Inverse Difference Moment Normalized** parametresi ortalama değeri (p=0.039),**GLCM Inverse Difference**parametresi ortalama değeri (p=0.036), **GLCM Inverse Difference**

Normalized parametresi ortalama değeri (p=0.033),**GLCM Inverse Variance** parametresi ortalama değeri (p=0.036)**GLRLM Short Run Emphasis** parametresi ortalama değeri (p=0.036),**GLRLM Gray Level Non Uniformity**parametresi ortalama değeri (p=0.007),**GLSZM Large Area Low Gray Level Emphasis**parametresi ortalama değeri (p=0.018)**, NGTDM Matrix Comlexity** parametresi ortalama değeri (p=0.031)ALK rearranjmanı olan lezyonlarda daha düşük olup istatistiksel olarak anlamlı farklılık saptandı (p<0.05).**GLRLM Run Length Non Uniformity Normalized**parametresi ortalama değeri (p=0.039),**GLRLM Run Percentage** parametresi ortalama değeri (p=0.036),**GLSZMSize Zone Non Uniformity** parametresi ortalama değeri (p=0.040),**GLSZM Zone Percentage** parametresi ortalama değeri (p=0.024), **GLDM Small Dependence Emphasis** parametresi ortalama değeri (p=0.031), **GLDM Dependence Non Uniformity Normalized**parametresi ortalama değeri (p=0.025) ALK rearranjmanı olan tümörlerde daha yüksek olup istatistiksel olarak anlamlı farklılık saptanmıştır (p<0.05) (Tablo 8).

Tablo 8:ALK rearranjmanı olan tümörlerin intratümöral texture analiz parametreleri

Variable	Descriptive Value for 0*	Descriptive Value for 1*	Test P-value	Variable	Descriptive Value for 0	Descriptive Value for 1	Test P-value
Original Shape Mesh Volume	8.145e+15 (1.16e+12 - 6.4e+16)	2.29e+15 (8.05e+14 - 5.93e+16)	0.828[m]	Original Gray Level Co-occurrence Matrix Maximum Probability	0.01 (0 - 0.05)	0 (0 - 0.02)	0.314[m]
Original Shape Voxel Volume	4.695e+15 (1.17e+10 - 6.3e+16)	1.85e+16 (1.32e+15 - 5.94e+16)	0.169[m]	Original Gray Level Co-occurrence Matrix Sum Average	7.355e+15 (8.11e+14 - 6.34e+16)	7.36e+15 (6.17e+15 - 4.76e+16)	0.827[m]
Original Shape Surface Area	7.495e+15 (8.28e+14 - 3.88e+16)	1.23e+16 (8.77e+14 - 6.24e+16)	0.338[m]	Original Gray Level Co-occurrence Matrix Sum Entropy	5.575e+15 (4.84e+12 - 5.51e+16)	5.6e+15 (4.95e+14 - 6.24e+16)	0.282[m]
Original Shape Surface Area to Volume Ratio	0.28 (0.09 - 0.91)	0.34 (0.22 - 1.06e+16)	0.356[m]	Original Gray Level Co-occurrence Matrix Sum of Squares	1.02e+16 (5.42e+14 - 5.04e+16)	1.98e+16 (9.99e+15 - 6.16e+16)	0.102[m]
Original Shape Sphericity	5.46E-01 (9.60E-02)	5.23E-01 (1.77E-01)	0.695[f]	Original Gray Level Run Length Matrix Short Run Emphasis	9.51E-01 (2.07E-02)	9.67E-01 (1.53E-02)	0.036[f]
Original Shape Compactness 1	2.17E-02 (5.67E-03)	2.08E-02 (1.04E-02)	0.695[f]	Original Gray Level Run Length Matrix Long Run Emphasis	1.16e+16 (1.38e+14 - 1.54e+16)	1.13e+16 (1.17e+15 - 1.27e+16)	0.624[m]
Original Shape Compactness 2	0.17 (0.06 - 0.37)	0.14 (0.03 - 0.55)	0.845[m]	Original Gray Level Run Length Matrix Gray Level Non Uniformity	6.875e+15 (7.15e+12 - 4.98e+16)	6.16e+15 (4.09e+14 - 2.02e+16)	0.528[m]
Original Shape Spherical Disproportion	1.73e+16 (1.41e+15 - 2.61e+16)	1.62e+16 (1.93e+15 - 3.12e+16)	0.829[m]	Original Gray Level Run Length Matrix Gray Level Non Uniformity Normalized	0.04 (0.02 - 0.1)	0.03 (0.03 - 0.05)	0.007[m]
Original Shape Maximum 3D Diameter	7.98e+15 (2.96e+14 - 6.33e+16)	6.91e+15 (1.19e+15 - 1.22e+16)	0.016[m]	Original Gray Level Run Length Matrix Run Length Non Uniformity	6.07e+15 (1.87e+14 - 6.52e+16)	7.65e+15 (1.92e+15 - 2.2e+16)	0.554[m]
Original Shape Maximum 2D Diameter Slice	5.475e+15 (5.46e+13 - 6.23e+16)	6.99e+15 (4.34e+15 - 6e+16)	0.642[m]	Original Gray Level Run Length Matrix Run Length Non Uniformity Normalized	8.79E-01 (4.66E-02)	9.18E-01 (3.67E-02)	0.039[f]
Original Shape Maximum 2D Diameter Column	7.27e+15 (3.39e+14 - 5.48e+16)	9.67e+15 (5.82e+14 - 5.11e+16)	0.553[m]	Original Gray Level Run Length Matrix Run Percentage	9.34E-01 (2.77E-02)	9.56E-01 (2.04E-02)	0.036[f]
Original Shape Maximum 2D Diameter Row	6.89e+15 (9.44e+14 - 6.23e+16)	6.6e+15 (9.88e+14 - 5.57e+16)	0.951[m]	Original Gray Level Run Length Matrix Gray Level Variance	8.94e+15 (1.57e+15 - 4.14e+16)	1.27e+16 (3.76e+15 - 2.16e+16)	0.950[m]
Original Shape Major Axis Length	6.55e+15 (5.01e+14 - 6.34e+16)	5.37e+15 (4.01e+15 - 8.52e+15)	0.006[m]	Original Gray Level Run Length Matrix Run Variance	0.07 (0.02 - 0.2)	0.05 (0.01 - 0.1)	0.063[m]
Original Shape Minor Axis Length	6.47e+15 (3.38e+13 - 5.81e+16)	5.06e+15 (2.51e+15 - 4.04e+16)	0.946[m]	Original Gray Level Run Length Matrix Run Entropy	5.385e+15 (4.51e+14 - 5.73e+16)	5.64e+15 (4.97e+15 - 5.79e+16)	0.316[m]
Original Shape Least Axis Length	8.03e+15 (1.93e+12 - 4.84e+16)	2.03e+16 (3.99e+14 - 3.72e+16)	0.618[m]	Original Gray Level Run Length Matrix Low Gray Level Run Emphasis	0 (0 - 0.03)	0.01 (0 - 0.01)	0.511[m]
Original Shape Elongation	7.73E-01 (1.20E-01)	7.38E-01 (9.15E-02)	0.310[f]	Original Gray Level Run Length Matrix High Gray Level Run Emphasis	1.05E+16 (7.16E+15)	9.10E+15 (5.79E+15)	0.671[f]
Original Shape Flatness	5.64E-01 (1.51E-01)	5.89E-01 (1.30E-01)	0.862[f]	Original Gray Level Run Length Matrix Short Run Low Gray Level Emphasis	0 (0 - 0.03)	0.01 (0 - 0.01)	0.498[m]
Original First Order Energy	66050000 (666000 - 1.65e+09)	1.37e+08 (127000 - 2.91e+08)	0.587[m]	Original Gray Level Run Length Matrix Short Run High Gray Level Emphasis	1.085e+16 (1.55e+12 - 4.6e+16)	1.03e+16 (9.73e+14 - 1.76e+16)	0.318[m]
Original First Order Total Energy	1.22e+16 (2.85e+13 - 5.87e+16)	3.69e+15 (3.63e+14 - 1.46e+16)	0.003[m]	Original Gray Level Run Length Matrix Long Run Low Gray Level Emphasis	0 (0 - 0.03)	0.01 (0 - 0.01)	0.579[m]
Original First Order Entropy	5.1e+15 (5.05e+14 - 5.67e+16)	5.54e+15 (5.07e+15 - 5.41e+16)	0.211[m]	Original Gray Level Run Length Matrix Long Run High Gray Level Emphasis	1.235e+16 (1.09e+15 - 3.92e+16)	7.35e+15 (1.66e+14 - 1.54e+16)	0.118[m]
Original First Order Minimum	-92.5 (-521 - -28)	-92 (-117 - -41)	0.355[m]	Original Gray Level Size Zone Matrix Small Area Emphasis	7.14E-01 (4.54E-02)	7.56E-01 (7.58E-02)	0.087[f]
Original First Order 10th Percentile	4 (-1.9e+16 - 33)	-11 (-60.3 - 34)	0.673[m]	Original Gray Level Size Zone Matrix Large Area Emphasis	6.77e+15 (3.62e+08 - 3.28e+16)	9.28e+15 (2.6e+15 - 1.82e+16)	0.745[m]
Original First Order 90th Percentile	8.09E+01 (1.36E+01)	8.73E+01 (3.08E+01)	0.551[g]	Original Gray Level Size Zone Matrix Gray Level Non Uniformity	8.705e+15 (16600000 - 3.73e+16)	9.16e+15 (2.19e+15 - 4.68e+16)	0.567[m]
Original First Order Maximum	175.5 (110 - 792)	163 (63 - 270)	0.439[m]	Original Gray Level Size Zone Matrix Gray Level Non Uniformity Normalized	0.03 (0.02 - 0.07)	0.03 (0.02 - 0.04)	0.086[m]
Original First Order Mean	5.505e+15 (5.57e+13 - 5.57e+16)	4.57e+15 (-6130 - 4.35e+16)	0.419[m]	Original Gray Level Size Zone Matrix Size Zone Non Uniformity	8.11e+15 (1550 - 4.07e+16)	6.07e+15 (3.3e+14 - 1.46e+16)	0.446[m]
Original First Order Median	4.64E+01 (1.32E+01)	4.24E+01 (2.41E+01)	0.843[f]	Original Gray Level Size Zone Matrix Size Zone Non Uniformity Normalized	0.47 (0.37 - 0.67)	0.51 (0.41 - 0.79)	0.040[m]
Original First Order Interquartile Range	37 (23 - 73)	46 (33 - 68)	0.038[m]	Original Gray Level Size Zone Matrix Zone Percentage	4.32E-01 (1.52E-01)	5.70E-01 (1.63E-01)	0.024[f]
Original First Order Range	271 (145 - 955)	250 (162 - 327)	0.274[m]	Original Gray Level Size Zone Matrix Gray Level Variance	7.82e+15 (4.76e+11 - 5.43e+16)	1.77e+16 (1.58e+15 - 6.38e+16)	0.057[m]
Original First Order Mean Absolute Deviation	2.015e+16 (1.81e+15 - 3.09e+16)	4.59e+15 (2.17e+15 - 4.1e+16)	0.697[m]	Original Gray Level Size Zone Matrix Zone Variance	7.995e+15 (0.31 - 6.01e+16)	9.2e+15 (0.17 - 3.28e+16)	0.805[m]
Original First Order Robust Mean Absolute Deviation	1.365e+16 (1.16e+15 - 2.17e+16)	1.43e+16 (2e+15 - 2.94e+16)	0.360[m]	Original Gray Level Size Zone Matrix Zone Entropy	6.805e+15 (6.76e+14 - 7.16e+16)	6.8e+15 (6.96e+14 - 7.36e+15)	0.316[m]
Original First Order Root Mean Squared	5.685e+15 (5.48e+14 -	7.59e+15 (3.79e+15 -	0.380[m]	Original Gray Level Size Zone Matrix Low Gray Level Zone	0.01 (0 - 0.07)	0.01 (0.01 - 0.02)	0.758[m]

	6.23e+16)	5.44e+16)		Emphasis			
Original First Order Standard Deviation	6.055e+15 (3.44e+14 - 4.05e+16)	3.27e+16 (6.06e+15 - 5.5e+16)	0.008[m]	Original Gray Level Size Zone Matrix High Gray Level Zone Emphasis	1.1e+16 (1.7e+07 - 4.07e+16)	1.02e+16 (1.32e+15 - 1.72e+16)	0.749[m]
Original First Order Skewness	-0.5 (-1.9e+16 - 4.97e+14)	-0.48 (-0.97 - 0.06)	0.463[m]	Original Gray Level Size Zone Matrix Small Area Low Gray Level Emphasis	0.01 (0 - 0.06)	0.01 (0 - 0.01)	0.719[m]
Original First Order Kurtosis	5.045e+15 (3.46e+14 - 5.83e+16)	5.66e+15 (2.26e+13 - 3.97e+16)	0.850[m]	Original Gray Level Size Zone Matrix Small Area High Gray Level Emphasis	7.055e+15 (8.61e+14 - 4.03e+16)	7.97e+15 (3.43e+15 - 1.35e+16)	0.767[m]
Original First Order Variance	9.17E+15 (5.78E+15)	6.21E+15 (5.78E+15)	0.232[t]	Original Gray Level Size Zone Matrix Large Area Low Gray Level Emphasis	0.04 (0.01 - 3.88e+16)	0.02 (0.02 - 0.43)	0.018[m]
Original First Order Uniformity	0.04 (0.02 - 0.11)	0.03 (0.03 - 0.05)	0.007[m]	Original Gray Level Size Zone Matrix Large Area High Gray Level Emphasis	8.645e+15 (7.51e+10 - 6.44e+16)	7.58e+15 (8.9e+14 - 2.54e+16)	0.741[m]
Original Gray Level Co-occurrence Matrix Autocorrelation	9.98E+15 (6.72E+15)	1.22E+16 (4.32E+15)	0.426[t]	Original Neighboring Gray Tone Difference Matrix Coarseness	0 (0 - 3.02e+11)	0 (0 - 0.04)	0.360[m]
Original Gray Level Co-occurrence Matrix Joint Average	4.33e+15 (2.21e+14 - 5.23e+16)	4.08e+15 (4.2e+14 - 3.13e+16)	0.981[m]	Original Neighboring Gray Tone Difference Matrix Contrast	0.16 (0.02 - 1.49e+16)	0.4 (0.05 - 2.36e+15)	0.952[m]
Original Gray Level Co-occurrence Matrix Cluster Prominence	7.46e+15 (7.99e+14 - 3.03e+16)	4.28e+15 (1.14e+14 - 4.27e+16)	0.832[m]	Original Neighboring Gray Tone Difference Matrix Busyness	6.25e+14 (0.03 - 3.86e+16)	1.47e+15 (0.02 - 3.24e+16)	0.664[m]
Original Gray Level Co-occurrence Matrix Cluster Shade	-6.215e+15 (-3.24e+16 - 4.07e+16)	-4.23e+15 (-3.48e+16 - 1.36e+16)	0.502[m]	Original Neighboring Gray Tone Difference Matrix Complexity	8.245e+15 (1.9e+14 - 7.76e+16)	8.08e+15 (5.61e+14 - 1.23e+16)	0.031[m]
Original Gray Level Co-occurrence Matrix Cluster Tendency	1.056e+16 (4.69e+14 - 4.13e+16)	8.48e+15 (1.71e+15 - 3.39e+16)	0.792[m]	Original Neighboring Gray Tone Difference Matrix Strength	0.66 (0.05 - 3.25e+16)	0.6 (0.19 - 1.12e+16)	0.503[m]
Original Gray Level Co-occurrence Matrix Contrast	9.9e+15 (3.78e+14 - 3.84e+16)	7.54e+15 (1.45e+15 - 4.02e+16)	0.834[m]	Original Gray Level Dependence Matrix Small Dependence Emphasis	0.4 (0.22 - 0.72)	0.46 (0.3 - 0.82)	0.031[m]
Original Gray Level Co-occurrence Matrix Correlation	3.92E-01 (8.55E-02)	3.54E-01 (1.84E-01)	0.911[g]	Original Gray Level Dependence Matrix Large Dependence Emphasis	8.055e+15 (7.33e+14 - 2.84e+16)	1.21e+16 (5.32e+15 - 6.34e+16)	0.175[m]
Original Gray Level Co-occurrence Matrix Difference Average	7.89e+15 (6.34e+14 - 7.65e+16)	6.67e+15 (8.11e+13 - 1.63e+16)	0.002[m]	Original Gray Level Dependence Matrix Gray Level Non Uniformity	7.465e+15 (4.25e+14 - 4.85e+16)	4.3e+15 (45700 - 3.52e+16)	0.901[m]
Original Gray Level Co-occurrence Matrix Difference Entropy	4.25e+15 (4.51e+13 - 4.69e+16)	4.48e+15 (4.16e+15 - 4.55e+16)	0.891[m]	Original Gray Level Dependence Matrix Dependence Non Uniformity	8.155e+15 (1.62e+13 - 4.91e+16)	5.56e+15 (1.57e+15 - 2.28e+16)	0.433[m]
Original Gray Level Co-occurrence Matrix Difference Variance	6.685e+15 (3.1e+14 - 5.58e+16)	1.22e+16 (3.37e+14 - 6.04e+16)	0.270[m]	Original Gray Level Dependence Matrix Dependence Non Uniformity Normalized	0.22 (0.11 - 0.5)	0.27 (0.18 - 0.63)	0.025[m]
Original Gray Level Co-occurrence Matrix Joint Energy	0 (0 - 0.02)	0 (0 - 0.01)	0.530[m]	Original Gray Level Dependence Matrix Gray Level Variance	8.955e+15 (1.5e+14 - 5.1e+16)	1.24e+16 (7.03e+14 - 2.16e+16)	0.581[m]
Original Gray Level Co-occurrence Matrix Joint Entropy	8.885e+15 (7.98e+14 - 7.72e+16)	9.8e+15 (6.52e+15 - 1.05e+16)	0.989[m]	Original Gray Level Dependence Matrix Dependence Variance	1.365e+16 (0.37 - 3.47e+16)	1.1e+16 (0.29 - 1.85e+16)	0.342[m]
Original Gray Level Co-occurrence Matrix Informal Measure of Correlation 1	-0.05 (-0.59 - -0.02)	-0.06 (-0.75 - -0.04)	0.467[m]	Original Gray Level Dependence Matrix Dependence Entropy	6.965e+15 (6.35e+14 - 7.4e+16)	7.09e+15 (5.58e+15 - 7.62e+15)	0.557[m]
Original Gray Level Co-occurrence Matrix Informal Measure of Correlation 2	6.16E-01 (1.42E-01)	6.72E-01 (1.61E-01)	0.374[t]	Original Gray Level Dependence Matrix Low Gray Level Emphasis	0 (0 - 0.03)	0.01 (0 - 0.01)	0.493[m]
Original Gray Level Co-occurrence Matrix Inverse Difference Moment	1.99E-01 (7.09E-02)	1.42E-01 (5.32E-02)	0.034[t]	Original Gray Level Dependence Matrix High Gray Level Emphasis	1.12e+16 (1.41e+15 - 4.93e+16)	1.06e+16 (1.38e+15 - 1.84e+16)	0.658[m]
Original Gray Level Co-occurrence Matrix Maximal Correlation Coefficient	0.47 (0.24 - 0.96)	0.51 (0.3 - 0.99)	0.312[m]	Original Gray Level Dependence Matrix Small Dependence Low Gray Level Emphasis	0 (0 - 0.03)	0.01 (0 - 0.01)	0.397[m]
Original Gray Level Co-occurrence Matrix Inverse Difference Moment Normalized	0.99 (0.93 - 1)	0.98 (0.92 - 0.99)	0.039[m]	Original Gray Level Dependence Matrix Small Dependence High Gray Level Emphasis	5.385e+15 (3.84e+14 - 4.9e+16)	5.54e+15 (7.61e+14 - 4.62e+16)	0.867[m]
Original Gray Level Co-occurrence Matrix Inverse Difference	2.86E-01 (7.06E-02)	2.27E-01 (6.10E-02)	0.036[t]	Original Gray Level Dependence Matrix Large Dependence Low Gray Level Emphasis	0.01 (0.01 - 0.27)	0.01 (0.01 - 0.03)	0.679[m]
Original Gray Level Co-occurrence Matrix Inverse Difference Normalized	0.92 (0.83 - 0.97)	0.91 (0.81 - 0.94)	0.033[m]	Original Gray Level Dependence Matrix Large Dependence High Gray Level Emphasis	7.945e+15 (1.01e+14 - 4.02e+16)	6.9e+15 (3.36e+15 - 1.39e+16)	0.485[m]
Original Gray Level Co-occurrence Matrix Inverse Variance	2.03E-01 (7.05E-02)	1.47E-01 (5.35E-02)	0.036[t]				

[m]: Mann-Whitney U Test, [t]: T-Test for Equal Variance, [g]: T-Test for Unequal Variance, *: Mean (SD) for T-Test and Median (Min-Max) for Mann-Whitney U Test

EGFR mutasyonu saptanan lezyonlarda ise intratümöral texture analiz parametrelerinde istatistiksel olarak anlamlı farklılık saptanmadı (p>0.05) (Tablo 9).

Tablo 9:EGFR mutasyonu olan tümörlerin intratümöral texture analiz parametreleri

Variable	Descriptive Value for 0*	Descriptive Value for 1*	Test P-value	Variable	Descriptive Value for 0	Descriptive Value for 1	Test P-value
Original Shape Mesh Volume	6.66e+15 (1.16e+12 - 6.4e+16)	2.02e+16 (3.03e+15 - 4.05e+16)	0.248[m]	Original Gray Level Co-occurrence Matrix Maximum Probability	0.01 (0 - 0.05)	0.01 (0 - 0.03)	0.774[m]
Original Shape Voxel Volume	5.875e+15 (1.17e+10 - 5.94e+16)	8.27e+15 (1.84e+14 - 6.3e+16)	0.252[m]	Original Gray Level Co-occurrence Matrix Sum Average	7.325e+15 (8.86e+14 - 5.82e+16)	7.41e+15 (8.11e+14 - 6.34e+16)	0.954[m]
Original Shape Surface Area	9.435e+15 (8.77e+14 - 6.24e+16)	7.25e+15 (8.28e+14 - 3.88e+16)	0.290[m]	Original Gray Level Co-occurrence Matrix Sum Entropy	5.365e+15 (4.84e+12 - 6.24e+16)	5.68e+15 (4.28e+15 - 5.32e+16)	0.975[m]
Original Shape Surface Area to Volume Ratio	0.28 (0.09 - 1.06e+16)	0.32 (0.14 - 0.53)	0.530[m]	Original Gray Level Co-occurrence Matrix Sum of Squares	1.175e+16 (5.42e+14 - 6.16e+16)	1.05e+16 (1.15e+15 - 3.59e+16)	0.664[m]
Original Shape Sphericity	5.36E-01 (1.21E-01)	5.59E-01 (7.91E-02)	0.545[f]	Original Gray Level Run Length Matrix Short Run Emphasis	9.54E-01 (2.06E-02)	9.52E-01 (2.18E-02)	0.798[f]
Original Shape Compactness 1	2.12E-02 (7.09E-03)	2.23E-02 (4.79E-03)	0.545[f]	Original Gray Level Run Length Matrix Long Run Emphasis	1.14e+16 (1.38e+14 - 1.54e+16)	1.19e+16 (1.09e+15 - 1.46e+16)	0.571[m]
Original Shape Compactness 2	0.17 (0.03 - 0.55)	0.15 (0.1 - 0.36)	0.846[m]	Original Gray Level Run Length Matrix Gray Level Non Uniformity	6.875e+15 (4.09e+14 - 3.75e+16)	6.05e+15 (7.15e+12 - 4.98e+16)	0.954[m]
Original Shape Spherical Disproportion	1.71e+16 (1.66e+15 - 3.12e+16)	1.66e+16 (1.41e+15 - 2.15e+16)	0.146[m]	Original Gray Level Run Length Matrix Gray Level Non Uniformity Normalized	0.04 (0.02 - 0.1)	0.04 (0.03 - 0.09)	0.926[m]
Original Shape Maximum 3D Diameter	8.085e+15 (3.74e+14 - 6.11e+16)	6.61e+15 (2.96e+14 - 6.33e+16)	0.191[m]	Original Gray Level Run Length Matrix Run Length Non Uniformity	6.07e+15 (4.23e+14 - 6.52e+16)	1.15e+16 (1.87e+14 - 6.13e+16)	0.424[m]
Original Shape Maximum 2D Diameter Slice	6.43e+15 (5.71e+14 - 6e+16)	5.39e+15 (5.46e+13 - 6.23e+16)	0.490[m]	Original Gray Level Run Length Matrix Run Length Non Uniformity Normalized	8.86E-01 (4.71E-02)	8.83E-01 (4.85E-02)	0.798[f]
Original Shape Maximum 2D Diameter Column	7.845e+15 (3.39e+14 - 5.48e+16)	7.99e+15 (3.59e+14 - 5.02e+16)	0.301[m]	Original Gray Level Run Length Matrix Run Percentage	9.38E-01 (2.77E-02)	9.36E-01 (2.88E-02)	0.798[f]
Original Shape Maximum 2D Diameter Row	6.66e+15 (9.44e+14 - 5.57e+16)	7.24e+15 (4.82e+15 - 6.23e+16)	0.075[m]	Original Gray Level Run Length Matrix Gray Level Variance	9.22e+15 (1.57e+15 - 3.46e+16)	8.57e+15 (1.93e+15 - 4.14e+16)	0.732[m]
Original Shape Major Axis Length	7.105e+15 (2.94e+15 - 6.34e+16)	4.6e+15 (5.01e+14 - 5.3e+16)	0.867[m]	Original Gray Level Run Length Matrix Run Variance	0.06 (0.01 - 0.2)	0.06 (0.03 - 0.17)	0.790[m]
Original Shape Minor Axis Length	5.845e+15 (3.84e+14 - 5.81e+16)	7.18e+15 (3.38e+13 - 4.75e+16)	0.276[m]	Original Gray Level Run Length Matrix Run Entropy	5.38e+15 (4.51e+14 - 5.79e+16)	5.46e+15 (4.42e+15 - 5.7e+16)	0.224[m]
Original Shape Least Axis Length	8.03e+15 (3.33e+13 - 4.84e+16)	1.37e+16 (1.93e+12 - 2.84e+16)	0.577[m]	Original Gray Level Run Length Matrix Low Gray Level Run Emphasis	0 (0 - 0.03)	0.01 (0 - 0.02)	0.637[m]
Original Shape Elongation	0.78 (0.51 - 0.96)	0.78 (0.45 - 0.92)	0.707[m]	Original Gray Level Run Length Matrix High Gray Level Run Emphasis	1.025e+16 (1.63e+14 - 1.98e+16)	1.4e+16 (1.03e+14 - 2.71e+16)	0.169[m]
Original Shape Flatness	5.75E-01 (1.52E-01)	5.52E-01 (1.40E-01)	0.593[f]	Original Gray Level Run Length Matrix Short Run Low Gray Level Emphasis	0 (0 - 0.03)	0.01 (0 - 0.02)	0.640[m]
Original First Order Energy	104450000 (127000 - 1.65e+09)	53700000 (7190000 - 7.27e+08)	0.324[m]	Original Gray Level Run Length Matrix Short Run High Gray Level Emphasis	1.055e+16 (9.73e+14 - 1.84e+16)	1.12e+16 (1.55e+12 - 4.6e+16)	0.232[m]
Original First Order Total Energy	1.089e+16 (2.85e+13 - 5.84e+16)	9.56e+15 (3.71e+14 - 5.87e+16)	0.315[m]	Original Gray Level Run Length Matrix Long Run Low Gray Level Emphasis	0.01 (0 - 0.03)	0.01 (0 - 0.03)	0.634[m]
Original First Order Entropy	5.105e+15 (5.05e+14 - 5.67e+16)	5.12e+15 (4.38e+15 - 5.07e+16)	0.602[m]	Original Gray Level Run Length Matrix Long Run High Gray Level Emphasis	1.14e+16 (1.66e+14 - 2.71e+16)	1.24e+16 (1.48e+15 - 3.92e+16)	0.206[m]
Original First Order Minimum	-92.5 (-315 - -28)	-76 (-521 - -45)	0.370[m]	Original Gray Level Size Zone Matrix Small Area Emphasis	0.72 (0.65 - 0.91)	0.71 (0.63 - 0.8)	0.997[m]
Original First Order 10th Percentile	1.5 (-1.9e+16 - 34)	4 (-58 - 27)	0.530[m]	Original Gray Level Size Zone Matrix Large Area Emphasis	6.77e+15 (7.7e+14 - 3.15e+16)	6.96e+15 (3.62e+08 - 3.28e+16)	0.546[m]
Original First Order 90th Percentile	7.99E+01 (1.71E+01)	8.69E+01 (1.65E+01)	0.197[f]	Original Gray Level Size Zone Matrix Gray Level Non Uniformity	9.16e+15 (2.21e+14 - 4.68e+16)	8.25e+15 (16600000 - 3.19e+16)	0.931[m]
Original First Order Maximum	172 (63 - 685)	178 (110 - 792)	0.675[m]	Original Gray Level Size Zone Matrix Gray Level Non Uniformity Normalized	0.03 (0.02 - 0.07)	0.03 (0.02 - 0.06)	0.860[m]
Original First Order Mean	5.72e+15 (-6130 - 5.57e+16)	4.59e+15 (5.57e+13 - 4.81e+16)	0.092[m]	Original Gray Level Size Zone Matrix Size Zone Non Uniformity	8.18e+15 (3.3e+14 - 1.84e+16)	6.52e+15 (1550 - 4.07e+16)	0.615[m]
Original First Order Median	4.39E+01 (1.53E+01)	5.05E+01 (1.41E+01)	0.295[f]	Original Gray Level Size Zone Matrix Size Zone Non Uniformity Normalized	0.48 (0.39 - 0.79)	0.47 (0.37 - 0.6)	0.965[m]
Original First Order Interquartile Range	35 (26 - 68)	42 (23 - 73)	0.220[m]	Original Gray Level Size Zone Matrix Zone Percentage	4.54E-01 (1.65E-01)	4.52E-01 (1.53E-01)	0.951[f]
Original First Order Range	271.5 (145 - 763)	267 (192 - 955)	0.426[m]	Original Gray Level Size Zone Matrix Gray Level Variance	1.002e+16 (1.39e+13 - 6.38e+16)	1.13e+16 (4.76e+11 - 5.43e+16)	0.878[m]
Original First Order Mean Absolute Deviation	1.975e+16 (1.81e+15 - 4.1e+16)	2.19e+16 (2.67e+15 - 3.09e+16)	0.335[m]	Original Gray Level Size Zone Matrix Zone Variance	7.925e+15 (0.17 - 6.01e+16)	1.01e+16 (1.34e+15 - 3.6e+16)	0.734[m]
Original First Order Robust Mean Absolute Deviation	1.41e+16 (1.16e+15 - 2.94e+16)	1.21e+16 (1.39e+15 - 2.17e+16)	0.582[m]	Original Gray Level Size Zone Matrix Zone Entropy	6.83e+15 (6.76e+14 - 6.94e+16)	6.8e+15 (7.07e+14 - 7.16e+16)	0.286[m]
Original First Order Root Mean Squared	5.845e+15 (5.48e+14 -	6.5e+15 (6.81e+14 -	0.177[m]	Original Gray Level Size Zone Matrix Low Gray Level Zone	0.01 (0 - 0.04)	0.01 (0 - 0.07)	0.317[m]

	6.23e+16)	4.96e+16)		Emphasis			
Original First Order Standard Deviation	2.7e+16 (3.44e+14 - 5.5e+16)	3.92e+15 (2.3e+15 - 4.05e+16)	0.182[m]	Original Gray Level Size Zone Matrix High Gray Level Zone Emphasis	1.03E+16 (4.85E+15)	1.22E+16 (1.10E+16)	0.757[g]
Original First Order Skewness	-0.46 (-1.02e+16 - 4.97e+14)	-0.8 (-1.9e+16 - 0.83)	0.255[m]	Original Gray Level Size Zone Matrix Small Area Low Gray Level Emphasis	0.01 (0 - 0.04)	0.01 (0 - 0.06)	0.358[m]
Original First Order Kurtosis	5.375e+15 (2.26e+13 - 5.83e+16)	4.59e+15 (8.96e+14 - 3.72e+16)	0.248[m]	Original Gray Level Size Zone Matrix Small Area High Gray Level Emphasis	7.88e+15 (8.61e+14 - 4.03e+16)	6.51e+15 (9.21e+14 - 2.7e+16)	0.375[m]
Original First Order Variance	8.41E+15 (6.08E+15)	9.44E+15 (5.27E+15)	0.438[f]	Original Gray Level Size Zone Matrix Large Area Low Gray Level Emphasis	0.03 (0.01 - 3.88e+16)	0.04 (0.01 - 1.79e+16)	0.438[m]
Original First Order Uniformity	0.04 (0.02 - 0.11)	0.04 (0.03 - 0.1)	0.953[m]	Original Gray Level Size Zone Matrix Large Area High Gray Level Emphasis	8.645e+15 (3.9e+14 - 3.14e+16)	7.56e+15 (7.51e+10 - 6.44e+16)	0.407[m]
Original Gray Level Co-occurrence Matrix Autocorrelation	9.66E+15 (5.90E+15)	1.20E+16 (7.55E+15)	0.339[f]	Original Neighboring Gray Tone Difference Matrix Coarseness	0 (0 - 3.02e+11)	0 (0 - 5.25e+10)	0.118[m]
Original Gray Level Co-occurrence Matrix Joint Average	4.435e+15 (3.2e+14 - 3.47e+16)	4.05e+15 (2.21e+14 - 5.23e+16)	0.983[m]	Original Neighboring Gray Tone Difference Matrix Contrast	0.17 (0.02 - 1.49e+16)	0.18 (0.03 - 0.7)	0.471[m]
Original Gray Level Co-occurrence Matrix Cluster Prominence	9.44e+15 (1.14e+14 - 4.27e+16)	5.36e+15 (1.13e+15 - 2.46e+16)	0.359[m]	Original Neighboring Gray Tone Difference Matrix Busyness	3.345e+15 (0.02 - 3.86e+16)	0.79 (0.09 - 1.64e+16)	0.180[m]
Original Gray Level Co-occurrence Matrix Cluster Shade	-6.57E+15 (1.48E+16)	-4.32E+15 (8.65E+15)	0.720[f]	Original Neighboring Gray Tone Difference Matrix Complexity	8.395e+15 (1.9e+14 - 7.76e+16)	7.36e+15 (7.35e+14 - 3.14e+16)	0.106[m]
Original Gray Level Co-occurrence Matrix Cluster Tendency	5.945e+15 (4.69e+14 - 3.64e+16)	1.58e+16 (1.1e+15 - 4.13e+16)	0.102[m]	Original Neighboring Gray Tone Difference Matrix Strength	0.49 (0.05 - 2.64e+16)	0.77 (0.08 - 3.25e+16)	0.877[m]
Original Gray Level Co-occurrence Matrix Contrast	9.595e+15 (3.78e+14 - 4.02e+16)	1.29e+16 (5.36e+14 - 3.05e+16)	0.976[m]	Original Gray Level Dependence Matrix Small Dependence Emphasis	0.42 (0.22 - 0.82)	0.41 (0.23 - 0.62)	0.916[m]
Original Gray Level Co-occurrence Matrix Correlation	0.41 (-0.02 - 0.53)	0.38 (0.22 - 0.58)	0.335[m]	Original Gray Level Dependence Matrix Large Dependence Emphasis	8.785e+15 (7.33e+14 - 6.34e+16)	7.27e+15 (1.17e+15 - 2.27e+16)	0.160[m]
Original Gray Level Co-occurrence Matrix Difference Average	6.935e+15 (8.11e+13 - 7.65e+16)	9.62e+15 (4.2e+15 - 6.36e+16)	0.688[m]	Original Gray Level Dependence Matrix Gray Level Non Uniformity	6.295e+15 (45700 - 3.52e+16)	7.96e+15 (1.97e+15 - 4.85e+16)	0.294[m]
Original Gray Level Co-occurrence Matrix Difference Entropy	4.3e+15 (4.03e+14 - 4.55e+16)	4.26e+15 (4.51e+13 - 4.69e+16)	0.491[m]	Original Gray Level Dependence Matrix Dependence Non Uniformity	1.07e+16 (1.62e+13 - 4.91e+16)	5.71e+15 (9.3e+14 - 3.18e+16)	0.138[m]
Original Gray Level Co-occurrence Matrix Difference Variance	6.755e+15 (3.37e+14 - 6.04e+16)	6.75e+15 (3.1e+14 - 3.98e+16)	0.457[m]	Original Gray Level Dependence Matrix Dependence Non Uniformity Normalized	0.24 (0.11 - 0.63)	0.23 (0.13 - 0.39)	0.729[m]
Original Gray Level Co-occurrence Matrix Joint Energy	0 (0 - 0.02)	0 (0 - 0.01)	0.933[m]	Original Gray Level Dependence Matrix Gray Level Variance	8.85e+15 (1.5e+14 - 3.37e+16)	1.32e+16 (8.47e+14 - 5.1e+16)	0.144[m]
Original Gray Level Co-occurrence Matrix Joint Entropy	9.355e+15 (8.25e+14 - 7.72e+16)	8.83e+15 (7.98e+14 - 9.81e+15)	0.244[m]	Original Gray Level Dependence Matrix Dependence Variance	1.365e+16 (0.29 - 3.47e+16)	5.87e+15 (0.8 - 2.63e+16)	0.457[m]
Original Gray Level Co-occurrence Matrix Informal Measure of Correlation 1	-0.05 (-0.75 - -0.02)	-0.06 (-0.17 - -0.03)	0.716[m]	Original Gray Level Dependence Matrix Dependence Entropy	7.015e+15 (6.35e+14 - 7.4e+16)	7.05e+15 (7.09e+14 - 7.26e+15)	0.125[m]
Original Gray Level Co-occurrence Matrix Informal Measure of Correlation 2	0.61 (0.39 - 1)	0.66 (0.44 - 0.92)	0.419[m]	Original Gray Level Dependence Matrix Low Gray Level Emphasis	0 (0 - 0.03)	0.01 (0 - 0.02)	0.674[m]
Original Gray Level Co-occurrence Matrix Inverse Difference Moment	1.87E-01 (7.10E-02)	1.96E-01 (7.32E-02)	0.665[f]	Original Gray Level Dependence Matrix High Gray Level Emphasis	1.07e+16 (1.38e+15 - 1.98e+16)	1.17e+16 (1.6e+15 - 4.93e+16)	0.261[m]
Original Gray Level Co-occurrence Matrix Maximal Correlation Coefficient	0.47 (0.29 - 0.99)	0.48 (0.24 - 0.62)	0.583[m]	Original Gray Level Dependence Matrix Small Dependence Low Gray Level Emphasis	0 (0 - 0.03)	0.01 (0 - 0.01)	0.841[m]
Original Gray Level Co-occurrence Matrix Inverse Difference Moment Normalized	0.98 (0.92 - 1)	0.98 (0.96 - 1)	0.716[m]	Original Gray Level Dependence Matrix Small Dependence High Gray Level Emphasis	5.095e+15 (3.84e+14 - 4.9e+16)	6.63e+15 (3.92e+15 - 4.77e+16)	0.479[m]
Original Gray Level Co-occurrence Matrix Inverse Difference	2.74E-01 (7.26E-02)	2.84E-01 (7.29E-02)	0.683[f]	Original Gray Level Dependence Matrix Large Dependence Low Gray Level Emphasis	0.01 (0.01 - 0.27)	0.01 (0.01 - 0.16)	0.878[m]
Original Gray Level Co-occurrence Matrix Inverse Difference Normalized	0.92 (0.81 - 0.97)	0.92 (0.87 - 0.96)	0.723[m]	Original Gray Level Dependence Matrix Large Dependence High Gray Level Emphasis	7.075e+15 (1.01e+14 - 3.38e+16)	9.05e+15 (4.68e+15 - 4.02e+16)	0.087[m]
Original Gray Level Co-occurrence Matrix Inverse Variance	1.92E-01 (7.07E-02)	2.01E-01 (7.29E-02)	0.683[f]				

[m]: Mann-Whitney U Test, [f]: T-Test for Equal Variance, [g]: T-Test for Unequal Variance, *: Mean (SD) for T-Test and Median (Min-Max) for Mann-Whitney U Test

Wild tip tümörlerde ise şekil ve birinci derece parametrelerden**Interquartile range** parametresi ortalama değeri (p=0,012) wild tip tümörlerde daha düşük bulunmuş olup istatsitiksel olarak anlamlıdır (p<0.05).**Maximum 2D Diameter Row** parametresi ortalama değeri wild tip tümörlerde daha düşük bulunmuş olup istattistiksel olarak anlamlılık sınırındadır (p=0.05).**Voxel Volume**parametresi ortalama değeri(p=0.033),**Mean** parametresi ortalama değeri (p=0.043) mutasyon

saptanmayan tümörlerde daha yüksek saptanmıştır ve istatistiksel olarak anlamlıdır ($p<0.05$) (Tablo 10).

Wild tip tümörlerde ikinci ve yüksek derece parametrelere bakıldığında;**NGTDM Complexity**parametresi ortalama değeri ($p= 0.044$)daha yüksek bulunmuştur. İstatistiksel olarak anlamlı farklılık saptandı ($p<0.05$)(Tablo 10).

Tablo 10: Wild tip tümörlerde intratümöral texture analiz parametreleri

Variable	Descriptive Value for 0*	Descriptive Value for 1*	Test P-value	Variable	Descriptive Value for 0	Descriptive Value for 1	Test P-value
Original Shape Mesh Volume	1.79e+16 (8.05e+14 - 5.93e+16)	6.81e+15 (1.16e+12 - 6.4e+16)	0.225[m]	Original Gray Level Co-occurrence Matrix Maximum Probability	0.01 (0 - 0.03)	0.01 (0 - 0.05)	0.640[m]
Original Shape Voxel Volume	1.1585e+16 (1.84e+14 - 6.3e+16)	4.52e+15 (1.17e+10 - 4.69e+16)	0.033[m]	Original Gray Level Co-occurrence Matrix Sum Average	7.385e+15 (8.11e+14 - 6.34e+16)	7.29e+15 (8.86e+14 - 5.82e+16)	0.832[m]
Original Shape Surface Area	7.48e+15 (8.28e+14 - 6.24e+16)	8.37e+15 (2.53e+15 - 3.51e+16)	0.792[m]	Original Gray Level Co-occurrence Matrix Sum Entropy	5.66e+15 (4.95e+14 - 6.24e+16)	5.2e+15 (4.84e+12 - 5.51e+16)	0.186[m]
Original Shape Surface Area to Volume Ratio	0.33 (0.14 - 1.06e+16)	0.26 (0.09 - 0.91)	0.330[m]	Original Gray Level Co-occurrence Matrix Sum of Squares	1.16e+16 (1.15e+15 - 6.16e+16)	1.02e+16 (5.42e+14 - 5.04e+16)	0.109[m]
Original Shape Sphericity	5.46E-01 (1.19E-01)	5.40E-01 (1.05E-01)	0.794[f]	Original Gray Level Run Length Matrix Short Run Emphasis	9.57E-01 (2.07E-02)	9.50E-01 (2.06E-02)	0.220[f]
Original Shape Compactness 1	2.18E-02 (7.01E-03)	2.13E-02 (6.15E-03)	0.794[f]	Original Gray Level Run Length Matrix Long Run Emphasis	1.16e+16 (1.09e+15 - 1.46e+16)	1.14e+16 (1.38e+14 - 1.54e+16)	0.413[m]
Original Shape Compactness 2	0.15 (0.03 - 0.55)	0.17 (0.06 - 0.37)	0.749[m]	Original Gray Level Run Length Matrix Gray Level Non Uniformity	6.105e+15 (7.15e+12 - 4.98e+16)	6.95e+15 (4.23e+14 - 3.75e+16)	0.684[m]
Original Shape Spherical Disproportion	1.64e+16 (1.41e+15 - 3.12e+16)	1.74e+16 (1.66e+15 - 2.61e+16)	0.258[m]	Original Gray Level Run Length Matrix Gray Level Non Uniformity Normalized	0.04 (0.03 - 0.09)	0.04 (0.02 - 0.1)	0.148[m]
Original Shape Maximum 3D Diameter	6.76e+15 (2.96e+14 - 6.33e+16)	9.31e+15 (3.74e+14 - 6.11e+16)	0.483[m]	Original Gray Level Run Length Matrix Run Length Non Uniformity	8.09e+15 (1.87e+14 - 6.13e+16)	5.81e+15 (4.23e+14 - 6.52e+16)	0.767[m]
Original Shape Maximum 2D Diameter Slice	5.815e+15 (5.46e+13 - 6.23e+16)	6.1e+15 (5.71e+14 - 5.02e+16)	0.300[m]	Original Gray Level Run Length Matrix Run Length Non Uniformity Normalized	8.95E-01 (4.69E-02)	8.78E-01 (4.65E-02)	0.230[f]
Original Shape Maximum 2D Diameter Column	9.01e+15 (3.59e+14 - 5.11e+16)	7.2e+15 (3.39e+14 - 5.48e+16)	0.180[m]	Original Gray Level Run Length Matrix Run Percentage	9.43E-01 (2.75E-02)	9.33E-01 (2.77E-02)	0.220[f]
Original Shape Maximum 2D Diameter Row	6.98e+15 (9.88e+14 - 6.23e+16)	6.72e+15 (9.44e+14 - 4.44e+16)	0.050[m]	Original Gray Level Run Length Matrix Gray Level Variance	8.65e+15 (1.93e+15 - 4.14e+16)	9.11e+15 (1.57e+15 - 3.46e+16)	0.790[m]
Original Shape Major Axis Length	4.645e+15 (5.01e+14 - 5.3e+16)	7.82e+15 (2.94e+15 - 6.34e+16)	0.289[m]	Original Gray Level Run Length Matrix Run Variance	0.06 (0.01 - 0.17)	0.07 (0.02 - 0.2)	0.275[m]
Original Shape Minor Axis Length	5.34e+15 (3.38e+13 - 4.75e+16)	6.3e+15 (3.84e+14 - 5.81e+16)	0.346[m]	Original Gray Level Run Length Matrix Run Entropy	5.55e+15 (4.42e+15 - 5.79e+16)	5.34e+15 (4.51e+14 - 5.73e+16)	0.056[m]
Original Shape Least Axis Length	1.49e+16 (1.93e+12 - 3.72e+16)	7.36e+15 (3.33e+13 - 4.84e+16)	0.885[m]	Original Gray Level Run Length Matrix Low Gray Level Run Emphasis	0.01 (0 - 0.02)	0 (0 - 0.03)	0.362[m]
Original Shape Elongation	7.64E-01 (1.13E-01)	7.71E-01 (1.20E-01)	0.757[f]	Original Gray Level Run Length Matrix High Gray Level Run Emphasis	1.14E+16 (7.85E+15)	9.49E+15 (6.13E+15)	0.419[f]
Original Shape Flatness	5.65E-01 (1.34E-01)	5.71E-01 (1.59E-01)	0.724[f]	Original Gray Level Run Length Matrix Short Run Low Gray Level Emphasis	0.01 (0 - 0.02)	0 (0 - 0.03)	0.356[m]
Original First Order Energy	58850000 (127000 - 7.27e+08)	84900000 (666000 - 1.65e+09)	0.193[m]	Original Gray Level Run Length Matrix Short Run High Gray Level Emphasis	1.045e+16 (1.55e+12 - 4.6e+16)	1.08e+16 (1.07e+15 - 1.84e+16)	0.721[m]
Original First Order Total Energy	7.73e+15 (3.63e+14 - 5.87e+16)	1.26e+16 (2.85e+13 - 5.84e+16)	0.784[m]	Original Gray Level Run Length Matrix Long Run Low Gray Level Emphasis	0.01 (0 - 0.03)	0 (0 - 0.03)	0.400[m]
Original First Order Entropy	5.49e+15 (4.38e+15 - 5.41e+16)	5.08e+15 (5.05e+14 - 5.67e+16)	0.667[m]	Original Gray Level Run Length Matrix Long Run High Gray Level Emphasis	1.185e+16 (1.66e+14 - 3.92e+16)	1.23e+16 (1.09e+15 - 2.71e+16)	0.783[m]
Original First Order Minimum	-85.5 (-521 - -41)	-93 (-315 - -28)	0.887[m]	Original Gray Level Size Zone Matrix Small Area Emphasis	0.72 (0.63 - 0.91)	0.71 (0.65 - 0.84)	0.154[m]
Original First Order 10th Percentile	-5 (-60.3 - 34)	4 (-1.9e+16 - 33)	0.377[m]	Original Gray Level Size Zone Matrix Large Area Emphasis	8.12e+15 (3.62e+08 - 3.28e+16)	6.67e+15 (7.7e+14 - 3.15e+16)	0.755[m]
Original First Order 90th Percentile	8.71E+01 (2.17E+01)	7.78E+01 (1.09E+01)	0.107[g]	Original Gray Level Size Zone Matrix Gray Level Non Uniformity	8.705e+15 (16600000 - 4.68e+16)	9.16e+15 (2.21e+14 - 3.73e+16)	0.619[m]
Original First Order Maximum	169.5 (63 - 792)	173 (117 - 685)	0.857[m]	Original Gray Level Size Zone Matrix Gray Level Non Uniformity Normalized	0.03 (0.02 - 0.06)	0.03 (0.02 - 0.07)	0.159[m]
Original First Order Mean	4.58e+15 (-6130 - 4.81e+16)	5.92e+15 (3.47e+14 - 5.57e+16)	0.043[m]	Original Gray Level Size Zone Matrix Size Zone Non Uniformity	6.305e+15 (1550 - 4.07e+16)	8.87e+15 (4.91e+14 - 1.84e+16)	0.936[m]

Original First Order Median	4.76E+01 (1.80E+01)	4.43E+01 (1.25E+01)	0.426[f]	Original Gray Level Size Zone Matrix Size Zone Non Uniformity Normalized	0.48 (0.37 - 0.79)	0.47 (0.39 - 0.67)	0.151[m]
Original First Order Interquartile Range	42.5 (23 - 73)	34 (26 - 58)	0.012[m]	Original Gray Level Size Zone Matrix Zone Percentage	4.93E-01 (1.63E-01)	4.22E-01 (1.53E-01)	0.129[f]
Original First Order Range	262.5 (162 - 955)	283 (145 - 763)	0.945[m]	Original Gray Level Size Zone Matrix Gray Level Variance	1.16e+16 (4.76e+11 - 6.38e+16)	6.83e+15 (1.39e+13 - 3.08e+16)	0.129[m]
Original First Order Mean Absolute Deviation	2.05e+16 (2.17e+15 - 4.1e+16)	1.98e+16 (1.81e+15 - 2.9e+16)	0.554[m]	Original Gray Level Size Zone Matrix Zone Variance	9.65e+15 (0.17 - 3.6e+16)	6.65e+15 (0.31 - 6.01e+16)	0.897[m]
Original First Order Robust Mean Absolute Deviation	1.42e+16 (1.39e+15 - 2.94e+16)	1.38e+16 (1.16e+15 - 2.17e+16)	0.876[m]	Original Gray Level Size Zone Matrix Zone Entropy	6.8e+15 (6.96e+14 - 7.16e+16)	6.86e+15 (6.76e+14 - 6.94e+16)	0.811[m]
Original First Order Root Mean Squared	6.625e+15 (6.81e+14 - 5.44e+16)	5.67e+15 (5.48e+14 - 6.23e+16)	0.715[m]	Original Gray Level Size Zone Matrix Low Gray Level Zone Emphasis	0.01 (0 - 0.07)	0.01 (0 - 0.04)	0.254[m]
Original First Order Standard Deviation	1.7735e+16 (2.3e+15 - 5.5e+16)	2.54e+16 (3.44e+14 - 3.54e+16)	0.525[m]	Original Gray Level Size Zone Matrix High Gray Level Zone Emphasis	1.04e+16 (1.7e+07 - 4.07e+16)	1.1e+16 (1.11e+15 - 1.92e+16)	0.610[m]
Original First Order Skewness	-0.77 (-1.9e+16 - 0.83)	-0.45 (-1.02e+16 - 4.97e+14)	0.362[m]	Original Gray Level Size Zone Matrix Small Area Low Gray Level Emphasis	0.01 (0 - 0.06)	0.01 (0 - 0.04)	0.269[m]
Original First Order Kurtosis	4.71e+15 (2.26e+13 - 3.97e+16)	5.09e+15 (3.46e+14 - 5.83e+16)	0.424[m]	Original Gray Level Size Zone Matrix Small Area High Gray Level Emphasis	7.285e+15 (9.21e+14 - 2.7e+16)	7.82e+15 (8.61e+14 - 4.03e+16)	0.554[m]
Original First Order Variance	8.31E+15 (5.53E+15)	9.03E+15 (6.13E+15)	0.879[f]	Original Gray Level Size Zone Matrix Large Area Low Gray Level Emphasis	0.03 (0.01 - 1.79e+16)	0.04 (0.01 - 3.88e+16)	0.113[m]
Original First Order Uniformity	0.04 (0.03 - 0.1)	0.04 (0.02 - 0.11)	0.160[m]	Original Gray Level Size Zone Matrix Large Area High Gray Level Emphasis	7.57e+15 (7.51e+10 - 6.44e+16)	8.77e+15 (3.9e+14 - 3.14e+16)	0.449[m]
Original Gray Level Co-occurrence Matrix Autocorrelation	1.21E+16 (6.47E+15)	8.94E+15 (6.15E+15)	0.146[f]	Original Neighboring Gray Tone Difference Matrix Coarseness	0 (0 - 5.25e+10)	0 (0 - 3.02e+11)	0.073[m]
Original Gray Level Co-occurrence Matrix Joint Average	4.065e+15 (2.21e+14 - 5.23e+16)	4.44e+15 (3.2e+14 - 3.47e+16)	0.971[m]	Original Neighboring Gray Tone Difference Matrix Contrast	0.19 (0.03 - 2.36e+15)	0.14 (0.02 - 1.49e+16)	0.483[m]
Original Gray Level Co-occurrence Matrix Cluster Prominence	5.115e+15 (1.14e+14 - 4.27e+16)	1.17e+16 (7.99e+14 - 3.03e+16)	0.320[m]	Original Neighboring Gray Tone Difference Matrix Busyness	0.84 (0.02 - 3.24e+16)	3.68e+15 (0.03 - 3.86e+16)	0.370[m]
Original Gray Level Co-occurrence Matrix Cluster Shade	-6.07e+15 (-3.48e+16 - 1.36e+16)	-5.88e+15 (-3.24e+16 - 4.07e+16)	0.979[m]	Original Neighboring Gray Tone Difference Matrix Complexity	8.07e+15 (5.61e+14 - 3.14e+16)	8.55e+15 (1.9e+14 - 7.76e+16)	0.044[m]
Original Gray Level Co-occurrence Matrix Cluster Tendency	1.375e+16 (1.1e+15 - 4.13e+16)	5.14e+15 (4.69e+14 - 3.64e+16)	0.091[m]	Original Neighboring Gray Tone Difference Matrix Strength	0.76 (0.08 - 3.25e+16)	0.48 (0.05 - 2.64e+16)	0.729[m]
Original Gray Level Co-occurrence Matrix Contrast	1.002e+16 (5.36e+14 - 4.02e+16)	9.6e+15 (3.78e+14 - 3.84e+16)	0.900[m]	Original Gray Level Dependence Matrix Small Dependence Emphasis	4.42E-01 (1.46E-01)	3.81E-01 (1.27E-01)	0.154[f]
Original Gray Level Co-occurrence Matrix Correlation	0.38 (-0.02 - 0.58)	0.41 (0.21 - 0.5)	0.812[m]	Original Gray Level Dependence Matrix Large Dependence Emphasis	7.655e+15 (1.17e+15 - 6.34e+16)	8.78e+15 (7.33e+14 - 2.84e+16)	0.444[m]
Original Gray Level Co-occurrence Matrix Difference Average	7.88e+15 (8.11e+13 - 6.36e+16)	6.97e+15 (6.34e+14 - 7.65e+16)	0.443[m]	Original Gray Level Dependence Matrix Gray Level Non Uniformity	7.75e+15 (45700 - 4.85e+16)	7.34e+15 (4.25e+14 - 3.04e+16)	0.294[m]
Original Gray Level Co-occurrence Matrix Difference Entropy	4.41e+15 (4.51e+13 - 4.69e+16)	4.24e+15 (4.03e+14 - 4.17e+16)	0.466[m]	Original Gray Level Dependence Matrix Dependence Non Uniformity	5.635e+15 (9.3e+14 - 3.18e+16)	1.11e+16 (1.62e+13 - 4.91e+16)	0.051[m]
Original Gray Level Co-occurrence Matrix Difference Variance	6.845e+15 (3.1e+14 - 6.04e+16)	6.62e+15 (3.38e+14 - 5.58e+16)	0.902[m]	Original Gray Level Dependence Matrix Dependence Non Uniformity Normalized	0.25 (0.13 - 0.63)	0.22 (0.11 - 0.5)	0.200[m]
Original Gray Level Co-occurrence Matrix Joint Energy	0 (0 - 0.01)	0 (0 - 0.02)	0.593[m]	Original Gray Level Dependence Matrix Gray Level Variance	1.3e+16 (7.03e+14 - 5.1e+16)	8.82e+15 (1.5e+14 - 3.37e+16)	0.201[m]
Original Gray Level Co-occurrence Matrix Joint Entropy	9.145e+15 (7.98e+14 - 1.05e+16)	9.17e+15 (8.25e+14 - 7.72e+16)	0.284[m]	Original Gray Level Dependence Matrix Dependence Variance	8.435e+15 (0.29 - 2.63e+16)	1.47e+16 (0.37 - 3.47e+16)	0.167[m]
Original Gray Level Co-occurrence Matrix Informal Measure of Correlation 1	-0.06 (-0.75 - -0.03)	-0.05 (-0.59 - -0.02)	0.483[m]	Original Gray Level Dependence Matrix Dependence Entropy	7.055e+15 (7.09e+14 - 7.62e+15)	6.88e+15 (6.35e+14 - 7.4e+16)	0.139[m]
Original Gray Level Co-occurrence Matrix Informal Measure of Correlation 2	0.65 (0.44 - 1)	0.53 (0.39 - 1)	0.155[m]	Original Gray Level Dependence Matrix Low Gray Level Emphasis	0.01 (0 - 0.02)	0 (0 - 0.03)	0.375[m]
Original Gray Level Co-occurrence Matrix Inverse Difference Moment	1.77E-01 (7.06E-02)	2.00E-01 (7.11E-02)	0.274[f]	Original Gray Level Dependence Matrix High Gray Level Emphasis	1.08e+16 (1.38e+15 - 4.93e+16)	1.12e+16 (1.41e+15 - 1.98e+16)	0.298[m]
Original Gray Level Co-occurrence Matrix Maximal Correlation Coefficient	0.49 (0.24 - 0.99)	0.47 (0.29 - 0.96)	0.815[m]	Original Gray Level Dependence Matrix Small Dependence Low Gray Level Emphasis	0.01 (0 - 0.01)	0 (0 - 0.03)	0.423[m]
Original Gray Level Co-occurrence Matrix Inverse Difference Moment Normalized	0.98 (0.92 - 1)	0.99 (0.93 - 1)	0.253[m]	Original Gray Level Dependence Matrix Small Dependence High Gray Level Emphasis	6.415e+15 (7.61e+14 - 4.77e+16)	5.03e+15 (3.84e+14 - 4.9e+16)	0.442[m]
Original Gray Level Co-occurrence Matrix Inverse Difference	2.64E-01 (7.28E-02)	2.88E-01 (7.09E-02)	0.274[f]	Original Gray Level Dependence Matrix Large Dependence Low Gray Level Emphasis	0.01 (0.01 - 0.16)	0.01 (0.01 - 0.27)	0.872[m]
Original Gray Level Co-occurrence Matrix Inverse Difference Normalized	0.92 (0.81 - 0.96)	0.92 (0.83 - 0.97)	0.228[m]	Original Gray Level Dependence Matrix Large Dependence High Gray Level Emphasis	7.925e+15 (3.36e+15 - 4.02e+16)	7.5e+15 (1.01e+14 - 3.38e+16)	0.150[m]
Original Gray Level Co-occurrence Matrix Inverse Variance	1.82E-01 (7.04E-02)	2.04E-01 (7.07E-02)	0.274[f]				

[m]: Mann-Whitney U Test, [f]: T-Test for Equal Variance, [g]: T-Test for Unequal Variance, *: Mean (SD) for T-Test and Median (Min-Max) for Mann-Whitney U Test

Uzak metastaz saptanan hastalarda birinci derece ve şekil parametreleri incelendiğinde;**Maximum2D Diameter Slice** parametresi ortalama değeri (p=0.028), **Minor Axis Length** parametresi ortalama değeri (p=0.016) uzak metastaz saptanmayan hastalara göre daha yüksek saptanmıştır. Bulgular istatistiksel olarak anlamlıdır (p<0.05) (Tablo 11).

Uzak metastazı saptanan lezyonlara ikinci ve yüksek derece parametreler incelendiğinde;**GLCM Sum Average** parametresi ortalama değeri(p=0.007),**GLCM Joint Average** parametresi ortalama değeri (p<0.001),daha düşük bulunmuş olup istatistiksel olarak anlamlıdır (p<0.05) **GLCM Difference Variance** parametresi ortalama değeri (p=0.037), **GLCM Sum Entrophy** parametresi ortalama değeri (p=0.043), **GLRLM High Gray Level Run Emphasis** parametresi ortalama değeri (p=0.004), uzak metastaz yapan lezyonlarda daha yüksek saptanmış olup istatistiksel olarak anlamlıdır (p<0.05)(Tablo 11).

Tablo 11: Uzak metastazı saptanan tümörlerin intratümöral texture analiz parametreleri

Variable	Descriptive Value for 0*	Descriptive Value for 1*	Test P-value	Variable	Descriptive Value for 0	Descriptive Value for 1	Test P-value
Original Shape Mesh Volume	6.86e+15 (1.27e+15 - 4.66e+16)	1.05e+16 (1.16e+12 - 6.4e+16)	0.361[m]	Original Gray Level Co-occurrence Matrix Maximum Probability	0.01 (0 - 0.02)	0.01 (0 - 0.05)	0.419[m]
Original Shape Voxel Volume	5.805e+15 (1.52e+11 - 4.69e+16)	6.88e+15 (1.17e+10 - 6.3e+16)	0.542[m]	Original Gray Level Co-occurrence Matrix Sum Average	7.465e+15 (8.86e+14 - 8.89e+15)	7.31e+15 (8.11e+14 - 6.34e+16)	0.007[m]
Original Shape Surface Area	1.21e+16 (3.93e+15 - 3.51e+16)	7.01e+15 (8.28e+14 - 6.24e+16)	0.380[m]	Original Gray Level Co-occurrence Matrix Sum Entropy	5.125e+15 (5.33e+14 - 5.78e+15)	5.62e+15 (4.84e+12 - 6.24e+16)	0.043[m]
Original Shape Surface Area to Volume Ratio	0.25 (0.09 - 0.48)	0.3 (0.13 - 1.06e+16)	0.599[m]	Original Gray Level Co-occurrence Matrix Sum of Squares	6.985e+15 (1.69e+15 - 3.59e+16)	1.17e+16 (5.42e+14 - 6.16e+16)	0.303[m]
Original Shape Sphericity	5.34E-01 (8.59E-02)	5.45E-01 (1.17E-01)	0.877[f]	Original Gray Level Run Length Matrix Short Run Emphasis	9.52E-01 (1.58E-02)	9.53E-01 (2.21E-02)	0.754[f]
Original Shape Compactness 1	2.09E-02 (4.95E-03)	2.17E-02 (6.90E-03)	0.877[f]	Original Gray Level Run Length Matrix Long Run Emphasis	1.175e+16 (1.31e+15 - 1.37e+16)	1.14e+16 (1.38e+14 - 1.54e+16)	0.118[m]
Original Shape Compactness 2	0.16 (0.06 - 0.29)	0.16 (0.03 - 0.55)	0.580[m]	Original Gray Level Run Length Matrix Gray Level Non Uniformity	6.425e+15 (1.83e+14 - 3.57e+16)	7.12e+15 (7.15e+12 - 4.98e+16)	0.593[m]
Original Shape Spherical Disproportion	1.68e+16 (1.66e+15 - 2.61e+16)	1.7e+16 (1.41e+15 - 3.12e+16)	0.982[m]	Original Gray Level Run Length Matrix Gray Level Non Uniformity Normalized	0.04 (0.03 - 0.08)	0.04 (0.02 - 0.1)	0.869[m]
Original Shape Maximum 3D Diameter	1.0305e+16 (4.88e+15 - 6.11e+16)	7.56e+15 (2.96e+14 - 6.33e+16)	0.372[m]	Original Gray Level Run Length Matrix Run Length Non Uniformity	1.045e+16 (5.88e+14 - 6.52e+16)	6.33e+15 (1.87e+14 - 6.13e+16)	0.295[m]
Original Shape Maximum 2D Diameter Slice	5.235e+15 (5.71e+14 - 1.24e+16)	6.76e+15 (5.46e+13 - 6.23e+16)	0.028[m]	Original Gray Level Run Length Matrix Run Length Non Uniformity Normalized	8.82E-01 (3.60E-02)	8.86E-01 (5.01E-02)	0.772[f]
Original Shape Maximum 2D Diameter Column	8.62e+15 (3.39e+14 - 5.48e+16)	7.99e+15 (3.81e+14 - 5.11e+16)	0.741[m]	Original Gray Level Run Length Matrix Run Percentage	9.36E-01 (2.08E-02)	9.38E-01 (2.96E-02)	0.754[f]
Original Shape Maximum 2D Diameter Row	6.465e+15 (1.31e+15 - 4.44e+16)	7.06e+15 (9.44e+14 - 6.23e+16)	0.409[m]	Original Gray Level Run Length Matrix Gray Level Variance	1.1665e+16 (3.81e+15 - 4.14e+16)	8.73e+15 (1.57e+15 - 3.8e+16)	0.273[m]
Original Shape Major Axis Length	8.16e+15 (3.57e+15 - 6.34e+16)	5.34e+15 (5.01e+14 - 5.3e+16)	0.259[m]	Original Gray Level Run Length Matrix Run Variance	0.07 (0.05 - 0.13)	0.06 (0.01 - 0.2)	0.982[m]
Original Shape Minor Axis Length	4.495e+15 (3.84e+14 - 2.47e+16)	6.64e+15 (3.38e+13 - 5.81e+16)	0.016[m]	Original Gray Level Run Length Matrix Run Entropy	5.22e+15 (5.01e+14 - 5.73e+16)	5.4e+15 (4.51e+14 - 5.79e+16)	0.517[m]
Original Shape Least Axis Length	1.77e+16 (3.33e+13 - 4.84e+16)	6.03e+15 (1.93e+12 - 3.88e+16)	0.085[m]	Original Gray Level Run Length Matrix Low Gray Level Run Emphasis	0 (0 - 0.02)	0.01 (0 - 0.03)	0.137[m]
Original Shape Elongation	7.92E-01 (9.12E-02)	7.61E-01 (1.22E-01)	0.615[f]	Original Gray Level Run Length Matrix High Gray Level Run Emphasis	1.53e+16 (1.04e+16 - 1.98e+16)	9.45e+15 (1.03e+14 - 2.71e+16)	0.004[m]
Original Shape Flatness	6.19E-01 (1.21E-01)	5.53E-01 (1.52E-01)	0.276[f]	Original Gray Level Run Length Matrix Short Run Low Gray Level Emphasis	0 (0 - 0.02)	0.01 (0 - 0.03)	0.141[m]
Original First Order Energy	79750000 (10500000 - 1.65e+09)	6.4e+07 (127000 - 8.86e+08)	0.391[m]	Original Gray Level Run Length Matrix Short Run High Gray Level Emphasis	1.355e+16 (1.73e+15 - 1.84e+16)	1.03e+16 (1.55e+12 - 4.6e+16)	0.306[m]
Original First Order Total Energy	8.06e+15 (7.52e+13 -	1.18e+16 (2.85e+13 -	0.060[m]	Original Gray Level Run Length Matrix Long Run Low Gray Level Emphasis	0 (0 - 0.02)	0.01 (0 - 0.03)	0.126[m]

	2.33e+16)	5.87e+16)					
Original First Order Entropy	4.89e+15 (3.95e+15 - 5.45e+16)	5.21e+15 (5.05e+14 - 5.67e+16)	0.755[m]	Original Gray Level Run Length Matrix Long Run High Gray Level Emphasis	1.53e+16 (1.55e+15 - 2.71e+16)	1.16e+16 (1.66e+14 - 3.92e+16)	0.312[m]
Original First Order Minimum	-90.5 (-315 - -57)	-92 (-521 - -28)	0.383[m]	Original Gray Level Size Zone Matrix Small Area Emphasis	0.69 (0.66 - 0.76)	0.72 (0.63 - 0.91)	0.182[m]
Original First Order 10th Percentile	8 (-37 - 33)	-3 (-1.9e+16 - 34)	0.599[m]	Original Gray Level Size Zone Matrix Large Area Emphasis	1.44e+16 (7.7e+14 - 3.15e+16)	6.6e+15 (3.62e+08 - 3.28e+16)	0.154[m]
Original First Order 90th Percentile	8.36E+01 (1.39E+01)	8.14E+01 (1.80E+01)	0.477[f]	Original Gray Level Size Zone Matrix Gray Level Non Uniformity	7.245e+15 (2.76e+15 - 2.5e+16)	9.16e+15 (16600000 - 4.68e+16)	0.251[m]
Original First Order Maximum	165 (121 - 211)	176 (63 - 792)	0.267[m]	Original Gray Level Size Zone Matrix Gray Level Non Uniformity Normalized	0.03 (0.02 - 0.05)	0.03 (0.02 - 0.07)	0.626[m]
Original First Order Mean	5.715e+15 (6.13e+14 - 4.88e+16)	5.08e+15 (-6130 - 5.57e+16)	0.569[m]	Original Gray Level Size Zone Matrix Size Zone Non Uniformity	5.66e+15 (4.91e+14 - 1.84e+16)	8.38e+15 (1550 - 4.07e+16)	0.329[m]
Original First Order Median	5.09E+01 (1.25E+01)	4.43E+01 (1.56E+01)	0.156[f]	Original Gray Level Size Zone Matrix Size Zone Non Uniformity Normalized	0.45 (0.4 - 0.54)	0.48 (0.37 - 0.79)	0.191[m]
Original First Order Interquartile Range	33 (29 - 50)	39 (23 - 73)	0.203[m]	Original Gray Level Size Zone Matrix Zone Percentage	4.22E-01 (1.27E-01)	4.62E-01 (1.69E-01)	0.580[f]
Original First Order Range	261.5 (189 - 526)	267 (145 - 955)	0.672[m]	Original Gray Level Size Zone Matrix Gray Level Variance	4.48e+15 (1.39e+13 - 5.43e+16)	1.13e+16 (4.76e+11 - 6.38e+16)	0.764[m]
Original First Order Mean Absolute Deviation	2.015e+16 (1.81e+15 - 3e+16)	1.97e+16 (2.06e+15 - 4.1e+16)	0.861[m]	Original Gray Level Size Zone Matrix Zone Variance	7.735e+15 (1.13e+15 - 4.64e+16)	9.2e+15 (0.17 - 6.01e+16)	0.851[m]
Original First Order Robust Mean Absolute Deviation	1.26e+16 (1.66e+15 - 2.08e+16)	1.44e+16 (1.16e+15 - 2.94e+16)	0.351[m]	Original Gray Level Size Zone Matrix Zone Entropy	6.99e+15 (6.54e+15 - 6.94e+16)	6.79e+15 (6.76e+14 - 7.16e+16)	0.280[m]
Original First Order Root Mean Squared	6.575e+15 (4.64e+15 - 5.96e+16)	5.51e+15 (5.48e+14 - 6.23e+16)	0.858[m]	Original Gray Level Size Zone Matrix Low Gray Level Zone Emphasis	0 (0 - 0.03)	0.01 (0 - 0.07)	0.183[m]
Original First Order Standard Deviation	2.615e+16 (3.47e+14 - 3.81e+16)	6.27e+15 (3.44e+14 - 5.5e+16)	0.584[m]	Original Gray Level Size Zone Matrix High Gray Level Zone Emphasis	1.335e+16 (1.11e+15 - 1.92e+16)	1.02e+16 (1.7e+07 - 4.07e+16)	0.911[m]
Original First Order Skewness	-0.48 (-1.02e+16 - - 0.08)	-0.51 (-1.9e+16 - 4.97e+14)	0.813[m]	Original Gray Level Size Zone Matrix Small Area Low Gray Level Emphasis	0 (0 - 0.02)	0.01 (0 - 0.06)	0.192[m]
Original First Order Kurtosis	5.37e+15 (3.46e+14 - 4.64e+16)	5.05e+15 (2.26e+13 - 5.83e+16)	0.611[m]	Original Gray Level Size Zone Matrix Small Area High Gray Level Emphasis	9.31e+15 (1.2e+15 - 1.27e+16)	7.24e+15 (8.61e+14 - 4.03e+16)	0.981[m]
Original First Order Variance	8.81E+15 (4.25E+15)	8.68E+15 (6.24E+15)	0.877[f]	Original Gray Level Size Zone Matrix Large Area Low Gray Level Emphasis	0.03 (0.01 - 2.36e+16)	0.04 (0.01 - 3.88e+16)	0.271[m]
Original First Order Uniformity	0.04 (0.03 - 0.08)	0.04 (0.02 - 0.11)	0.915[m]	Original Gray Level Size Zone Matrix Large Area High Gray Level Emphasis	5.775e+15 (3.9e+14 - 1.69e+16)	9.61e+15 (7.51e+10 - 6.44e+16)	0.129[m]
Original Gray Level Co-occurrence Matrix Autocorrelation	1.13E+16 (7.69E+15)	1.00E+16 (6.11E+15)	0.360[f]	Original Neighboring Gray Tone Difference Matrix Coarseness	0 (0 - 1.89e+11)	0 (0 - 3.02e+11)	0.843[m]
Original Gray Level Co-occurrence Matrix Joint Average	3.9e+15 (3.2e+14 - 4.45e+15)	1.08e+16 (2.21e+14 - 5.23e+16)	<0.001[m]	Original Neighboring Gray Tone Difference Matrix Contrast	0.13 (0.02 - 0.37)	0.18 (0.02 - 1.49e+16)	0.546[m]
Original Gray Level Co-occurrence Matrix Cluster Prominence	1.014e+16 (7.99e+14 - 3.03e+16)	6.65e+15 (1.14e+14 - 4.27e+16)	0.519[m]	Original Neighboring Gray Tone Difference Matrix Busyness	1.06e+16 (0.18 - 3.86e+16)	0.9 (0.02 - 3.4e+16)	0.136[m]
Original Gray Level Co-occurrence Matrix Cluster Shade	-9.29e+15 (-3.24e+16 - 9.84e+15)	-4.23e+15 (-3.48e+16 - 4.07e+16)	0.123[m]	Original Neighboring Gray Tone Difference Matrix Complexity	9.185e+15 (8.94e+14 - 7.76e+16)	8.08e+15 (1.9e+14 - 7.24e+16)	0.252[m]
Original Gray Level Co-occurrence Matrix Cluster Tendency	1.056e+16 (4.69e+14 - 3.64e+16)	8.48e+15 (5.46e+14 - 4.13e+16)	0.964[m]	Original Neighboring Gray Tone Difference Matrix Strength	0.49 (0.07 - 1.83e+16)	0.74 (0.05 - 3.25e+16)	0.371[m]
Original Gray Level Co-occurrence Matrix Contrast	9.895e+15 (3.78e+14 - 2.98e+16)	9.6e+15 (5.36e+14 - 4.02e+16)	0.542[m]	Original Gray Level Dependence Matrix Small Dependence Emphasis	0.39 (0.22 - 0.49)	0.42 (0.22 - 0.82)	0.441[m]
Original Gray Level Co-occurrence Matrix Correlation	0.41 (0.27 - 0.58)	0.38 (-0.02 - 0.56)	0.412[m]	Original Gray Level Dependence Matrix Large Dependence Emphasis	6.77e+15 (8.36e+14 - 1.68e+16)	8.14e+15 (7.33e+14 - 6.34e+16)	0.259[m]
Original Gray Level Co-occurrence Matrix Difference Average	1.961e+16 (4.2e+15 - 7.65e+16)	6.97e+15 (8.11e+13 - 6.36e+16)	0.173[m]	Original Gray Level Dependence Matrix Gray Level Non Uniformity	6.295e+15 (6.43e+14 - 3.04e+16)	7.6e+15 (45700 - 4.85e+16)	0.611[m]
Original Gray Level Co-occurrence Matrix Difference Entropy	4.075e+15 (4.33e+14 - 3.53e+16)	4.34e+15 (4.51e+13 - 4.69e+16)	0.277[m]	Original Gray Level Dependence Matrix Dependence Non Uniformity	5.9e+15 (9.51e+14 - 4.91e+16)	7.83e+15 (1.62e+13 - 4.1e+16)	0.958[m]
Original Gray Level Co-occurrence Matrix Difference Variance	6.175e+15 (3.23e+15 - 1.46e+16)	6.75e+15 (3.1e+14 - 6.04e+16)	0.037[m]	Original Gray Level Dependence Matrix Dependence Non Uniformity Normalized	0.22 (0.15 - 0.28)	0.23 (0.11 - 0.63)	0.451[m]
Original Gray Level Co-occurrence Matrix Joint Energy	0 (0 - 0.01)	0 (0 - 0.02)	0.510[m]	Original Gray Level Dependence Matrix Gray Level Variance	8.815e+15 (1.37e+15 - 4.07e+16)	9.16e+15 (1.5e+14 - 5.1e+16)	0.945[m]
Original Gray Level Co-occurrence Matrix Joint Entropy	8.44e+15 (8.75e+14 - 9.97e+15)	9.27e+15 (7.98e+14 - 7.72e+16)	0.504[m]	Original Gray Level Dependence Matrix Dependence Variance	1.435e+16 (2.05e+15 - 3.28e+16)	1.28e+16 (0.29 - 3.47e+16)	0.784[m]
Original Gray Level Co-occurrence Matrix Informal Measure of Correlation 1	-0.04 (-0.1 - -0.03)	-0.06 (-0.75 - -0.02)	0.377[m]	Original Gray Level Dependence Matrix Dependence Entropy	6.85e+15 (6.66e+14 - 7.4e+16)	7.02e+15 (6.35e+14 - 7.07e+16)	0.312[m]
Original Gray Level Co-occurrence Matrix Informal Measure of Correlation 2	5.82E-01 (1.23E-01)	6.37E-01 (1.50E-01)	0.392[f]	Original Gray Level Dependence Matrix Low Gray Level Emphasis	0 (0 - 0.02)	0.01 (0 - 0.03)	0.136[m]
Original Gray Level Co-occurrence Matrix Inverse Difference Moment	1.95E-01 (5.09E-02)	1.88E-01 (7.63E-02)	0.712[f]	Original Gray Level Dependence Matrix High Gray Level Emphasis	1.38e+16 (1.81e+15 - 1.98e+16)	1.06e+16 (1.38e+15 - 4.93e+16)	0.788[m]
Original Gray Level Co-occurrence Matrix Maximal Correlation Coefficient	0.45 (0.29 - 0.62)	0.48 (0.24 - 0.99)	0.311[m]	Original Gray Level Dependence Matrix Small Dependence Low Gray Level Emphasis	0 (0 - 0.01)	0 (0 - 0.03)	0.207[m]
Original Gray Level Co-occurrence Matrix Inverse Difference Moment Normalized	0.99 (0.98 - 1)	0.98 (0.92 - 1)	0.303[m]	Original Gray Level Dependence Matrix Small Dependence High Gray Level Emphasis	5.58e+15 (4.35e+15 - 4.9e+16)	5.41e+15 (3.84e+14 - 4.77e+16)	0.869[m]
Original Gray Level Co-occurrence Matrix Inverse Difference	2.85E-01 (5.23E-02)	2.75E-01 (7.71E-02)	0.692[f]	Original Gray Level Dependence Matrix Large Dependence Low Gray Level Emphasis	0.01 (0.01 - 0.03)	0.01 (0.01 - 0.27)	0.261[m]
Original Gray Level Co-occurrence Matrix Inverse Difference Normalized	0.93 (0.9 - 0.95)	0.92 (0.81 - 0.97)	0.391[m]	Original Gray Level Dependence Matrix Large Dependence High Gray Level Emphasis	7.875e+15 (1.46e+14 - 1.61e+16)	7.51e+15 (1.01e+14 - 4.02e+16)	0.347[m]
Original Gray Level Co-occurrence Matrix Inverse Variance	2.01E-01 (5.22E-02)	1.93E-01 (7.56E-02)	0.712[f]				

[m]: Mann-Whitney U Test, [f]: T-Test for Equal Variance, [*]: T-Test for Unequal Variance, *: Mean (SD) for T-Test and Median (Min-Max) for Mann-Whitney U Test

Mediastinal lenf nodu metastazı yapan lezyonlar değerlendirildiğinde; birinci şekil parametrelerinden**Voxel Volume** parametresi ortalama değeri (p=0.003),**Mean** parametresi ortalama değeri (p=0.029) mediastinal lenf nodu metastazı saptanmayan lezyonlara göre daha yüksek bulunmuş olup istatistiksel olarak anlamlıdır (p<0.05) (Tablo 12).

İkinci ve yüksek derece parametreler incelendiğinde ise**GLCM Maximum Probability** parametresi ortalama değeri (p=0.047) lenf nodu metastazı yapan tümörlerde daha yüksek bulunmuş, **GLDM Gray Level Variance** parametresi ortalama değeri (p=0.049) daha düşük bulunmuş olup istatistiksel olarak anlamlıdır(p<0.05) (Tablo12).

Tablo 12: Mediastinal lenf nodu metastazı saptanan tümörlerin intratümöral texture analiz parametreleri

Variable	Descriptive Value for 0*	Descriptive Value for 1*	Test P-value	Variable	Descriptive Value for 0	Descriptive Value for 1	Test P-value
Original Shape Mesh Volume	6.51e+15 (8.05e+14 - 4.31e+16)	1.08e+16 (1.16e+12 - 6.4e+16)	0.215[m]	Original Gray Level Co-occurrence Matrix Maximum Probability	0.01 (0 - 0.02)	0.01 (0 - 0.05)	0.047[m]
Original Shape Voxel Volume	4.36e+15 (1.52e+11 - 1.06e+16)	8.955e+15 (1.17e+10 - 6.3e+16)	0.003[m]	Original Gray Level Co-occurrence Matrix Sum Average	6.79e+15 (5.55e+15 - 5.69e+16)	7.475e+15 (8.11e+14 - 6.34e+16)	0.393[m]
Original Shape Surface Area	7.01e+15 (2.95e+15 - 3.51e+16)	7.855e+15 (8.28e+14 - 6.24e+16)	0.988[m]	Original Gray Level Co-occurrence Matrix Sum Entropy	5.64e+15 (5.33e+14 - 5.98e+16)	5.435e+15 (4.84e+12 - 6.24e+16)	0.933[m]
Original Shape Surface Area to Volume Ratio	0.3 (0.09 - 0.91)	0.28 (0.13 - 1.06e+16)	0.530[m]	Original Gray Level Co-occurrence Matrix Sum of Squares	9.99e+15 (5.42e+14 - 6.16e+16)	1.185e+16 (6.09e+14 - 5.86e+16)	0.521[m]
Original Shape Sphericity	5.81E-01 (8.52E-02)	5.27E-01 (1.16E-01)	0.083[r]	Original Gray Level Run Length Matrix Short Run Emphasis	9.59E-01 (1.70E-02)	9.51E-01 (2.18E-02)	0.260[r]
Original Shape Compactness 1	2.36E-02 (5.07E-03)	2.07E-02 (6.85E-03)	0.083[r]	Original Gray Level Run Length Matrix Long Run Emphasis	1.15e+16 (1.16e+15 - 1.37e+16)	1.16e+16 (1.38e+14 - 1.54e+16)	0.965[m]
Original Shape Compactness 2	0.19 (0.06 - 0.35)	0.13 (0.03 - 0.55)	0.266[m]	Original Gray Level Run Length Matrix Gray Level Non Uniformity	7.76e+15 (4.09e+14 - 3.57e+16)	6.44e+15 (7.15e+12 - 4.98e+16)	0.558[m]
Original Shape Spherical Disproportion	1.74e+16 (1.5e+15 - 2.61e+16)	1.68e+16 (1.41e+15 - 3.12e+16)	0.962[m]	Original Gray Level Run Length Matrix Gray Level Non Uniformity Normalized	0.04 (0.02 - 0.08)	0.04 (0.03 - 0.1)	0.206[m]
Original Shape Maximum 3D Diameter	6.61e+15 (3.74e+14 - 5.05e+16)	7.765e+15 (2.96e+14 - 6.33e+16)	0.395[m]	Original Gray Level Run Length Matrix Run Length Non Uniformity	5.2e+15 (5.88e+14 - 6.52e+16)	7.625e+15 (1.87e+14 - 6.13e+16)	0.935[m]
Original Shape Maximum 2D Diameter Slice	6.1e+15 (3.15e+15 - 5.02e+16)	5.815e+15 (5.46e+13 - 6.23e+16)	0.725[m]	Original Gray Level Run Length Matrix Run Length Non Uniformity Normalized	9.00E-01 (3.96E-02)	8.80E-01 (4.90E-02)	0.260[r]
Original Shape Maximum 2D Diameter Column	4.52e+15 (3.39e+14 - 5.48e+16)	9.255e+15 (3.59e+14 - 5.14e+16)	0.171[m]	Original Gray Level Run Length Matrix Run Percentage	9.46E-01 (2.26E-02)	9.34E-01 (2.92E-02)	0.250[r]
Original Shape Maximum 2D Diameter Row	6.21e+15 (1.31e+15 - 4.44e+16)	6.89e+15 (9.44e+14 - 6.23e+16)	0.430[m]	Original Gray Level Run Length Matrix Gray Level Variance	9.11e+15 (3.81e+15 - 2.35e+16)	8.94e+15 (1.57e+15 - 4.14e+16)	0.714[m]
Original Shape Major Axis Length	6.42e+15 (2.94e+15 - 3.68e+16)	5.705e+15 (5.01e+14 - 6.34e+16)	0.626[m]	Original Gray Level Run Length Matrix Run Variance	0.06 (0.02 - 0.13)	0.07 (0.01 - 0.2)	0.180[m]
Original Shape Minor Axis Length	5e+15 (3.38e+13 - 3.32e+16)	6.185e+15 (2.07e+14 - 5.81e+16)	0.314[m]	Original Gray Level Run Length Matrix Run Entropy	5.37e+15 (5.01e+14 - 5.73e+16)	5.395e+15 (4.51e+14 - 5.79e+16)	0.266[m]
Original Shape Least Axis Length	1.46e+16 (3.33e+13 - 4.84e+16)	5.18e+15 (1.93e+12 - 3.88e+16)	0.261[m]	Original Gray Level Run Length Matrix Low Gray Level Run Emphasis	0.01 (0 - 0.03)	0 (0 - 0.02)	0.315[m]
Original Shape Elongation	7.91E-01 (1.26E-01)	7.58E-01 (1.12E-01)	0.377[r]	Original Gray Level Run Length Matrix High Gray Level Run Emphasis	1.09E+16 (5.69E+15)	1.01E+16 (7.44E+15)	0.724[r]
Original Shape Flatness	6.14E-01 (1.12E-01)	5.49E-01 (1.57E-01)	0.271[s]	Original Gray Level Run Length Matrix Short Run Low Gray Level Emphasis	0.01 (0 - 0.03)	0 (0 - 0.02)	0.298[m]
Original First Order Energy	40800000 (666000 - 1.65e+09)	84250000 (127000 - 8.86e+08)	0.606[m]	Original Gray Level Run Length Matrix Short Run High Gray Level Emphasis	1.08e+16 (9.73e+14 - 1.84e+16)	1.075e+16 (1.55e+12 - 4.6e+16)	0.616[m]
Original First Order Total Energy	9.98e+15 (7.52e+13 - 5.87e+16)	1.068e+16 (2.85e+13 - 5.4e+16)	0.869[m]	Original Gray Level Run Length Matrix Long Run Low Gray Level Emphasis	0.01 (0 - 0.03)	0 (0 - 0.03)	0.412[m]
Original First Order Entropy	5.1e+15 (3.95e+15 - 5.67e+16)	5.115e+15 (5.05e+14 - 5.14e+16)	0.459[m]	Original Gray Level Run Length Matrix Long Run High Gray Level Emphasis	1.3e+16 (1.09e+15 - 2.71e+16)	1.07e+16 (1.66e+14 - 3.92e+16)	0.393[m]
Original First Order Minimum	-74 (-315 - -28)	-96 (-521 - -41)	0.447[m]	Original Gray Level Size Zone Matrix Small Area Emphasis	0.72 (0.66 - 0.84)	0.71 (0.63 - 0.91)	0.531[m]
Original First Order 10th Percentile	4 (-1.9e+16 - 33)	0.5 (-60.3 - 34)	0.337[m]	Original Gray Level Size Zone Matrix Large Area Emphasis	9.28e+15 (1.89e+15 - 3.15e+16)	6.77e+15 (3.62e+08 - 3.28e+16)	0.735[m]

Original First Order 90th Percentile	7.73E+01 (1.26E+01)	8.38E+01 (1.84E+01)	0.301[f]	Original Gray Level Size Zone Matrix Gray Level Non Uniformity	7.28e+15 (2.21e+14 - 3.73e+16)	1.056e+16 (16600000 - 4.68e+16)	0.169[m]
Original First Order Maximum	166 (117 - 211)	189.5 (63 - 792)	0.156[m]	Original Gray Level Size Zone Matrix Gray Level Non Uniformity Normalized	0.03 (0.02 - 0.05)	0.03 (0.02 - 0.07)	0.204[m]
Original First Order Mean	2.07e+16 (4.22e+14 - 5.57e+16)	4.835e+15 (-6130 - 4.88e+16)	0.029[m]	Original Gray Level Size Zone Matrix Size Zone Non Uniformity	1.24e+16 (8.82e+14 - 2.64e+16)	6.305e+15 (1550 - 4.07e+16)	0.181[m]
Original First Order Median	4.25E+01 (1.42E+01)	4.71E+01 (1.55E+01)	0.433[f]	Original Gray Level Size Zone Matrix Size Zone Non Uniformity Normalized	0.48 (0.4 - 0.67)	0.47 (0.37 - 0.79)	0.574[m]
Original First Order Interquartile Range	34 (26 - 58)	39 (23 - 73)	0.415[m]	Original Gray Level Size Zone Matrix Zone Percentage	4.93E-01 (1.54E-01)	4.37E-01 (1.62E-01)	0.351[f]
Original First Order Range	230 (145 - 526)	287 (162 - 955)	0.128[m]	Original Gray Level Size Zone Matrix Gray Level Variance	1.07e+16 (1.37e+15 - 2.41e+16)	9.36e+15 (4.76e+11 - 6.38e+16)	0.399[m]
Original First Order Mean Absolute Deviation	2.05e+16 (1.81e+15 - 2.9e+16)	1.955e+16 (2e+15 - 4.1e+16)	0.742[m]	Original Gray Level Size Zone Matrix Zone Variance	1.04e+16 (0.31 - 6.01e+16)	6.615e+15 (0.17 - 3.7e+16)	0.228[m]
Original First Order Robust Mean Absolute Deviation	1.23e+16 (1.16e+15 - 2.17e+16)	1.435e+16 (1.39e+15 - 2.94e+16)	0.126[m]	Original Gray Level Size Zone Matrix Zone Entropy	6.96e+15 (6.76e+14 - 6.99e+16)	6.76e+15 (6.96e+14 - 7.16e+16)	0.381[m]
Original First Order Root Mean Squared	6.58e+15 (5.48e+14 - 6.23e+16)	5.845e+15 (6.81e+14 - 6.09e+16)	0.100[m]	Original Gray Level Size Zone Matrix Low Gray Level Zone Emphasis	0.01 (0 - 0.04)	0.01 (0 - 0.07)	0.627[m]
Original First Order Standard Deviation	2.38e+16 (3.44e+14 - 4.01e+16)	2.595e+16 (3.47e+14 - 5.5e+16)	0.772[m]	Original Gray Level Size Zone Matrix High Gray Level Zone Emphasis	9.38e+15 (1.11e+15 - 1.92e+16)	1.1e+16 (1.7e+07 - 4.07e+16)	0.262[m]
Original First Order Skewness	-0.36 (-0.86 - 0.04)	-0.57 (-1.9e+16 - 4.97e+14)	0.090[m]	Original Gray Level Size Zone Matrix Small Area Low Gray Level Emphasis	0.01 (0 - 0.04)	0.01 (0 - 0.06)	0.510[m]
Original First Order Kurtosis	5.05e+15 (3.46e+14 - 4.71e+16)	5.065e+15 (2.26e+13 - 5.83e+16)	0.725[m]	Original Gray Level Size Zone Matrix Small Area High Gray Level Emphasis	7.33e+15 (8.61e+14 - 1.27e+16)	7.65e+15 (9.21e+14 - 4.03e+16)	0.512[m]
Original First Order Variance	8.79E+15 (6.08E+15)	8.67E+15 (5.81E+15)	0.911[f]	Original Gray Level Size Zone Matrix Large Area Low Gray Level Emphasis	0.04 (0.02 - 2.36e+16)	0.04 (0.01 - 3.88e+16)	0.893[m]
Original First Order Uniformity	0.04 (0.02 - 0.08)	0.04 (0.03 - 0.11)	0.202[m]	Original Gray Level Size Zone Matrix Large Area High Gray Level Emphasis	1.33e+16 (8.9e+14 - 3.13e+16)	5.72e+15 (7.51e+10 - 6.44e+16)	0.511[m]
Original Gray Level Co-occurrence Matrix Autocorrelation	8.54E+15 (5.86E+15)	1.11E+16 (6.58E+15)	0.238[f]	Original Neighboring Gray Tone Difference Matrix Coarseness	0 (0 - 1.89e+11)	0 (0 - 3.02e+11)	0.896[m]
Original Gray Level Co-occurrence Matrix Joint Average	4.44e+15 (3.2e+14 - 3.23e+16)	4.155e+15 (2.21e+14 - 5.23e+16)	0.883[m]	Original Neighboring Gray Tone Difference Matrix Contrast	0.18 (0.02 - 1.49e+16)	0.16 (0.02 - 2.36e+15)	0.369[m]
Original Gray Level Co-occurrence Matrix Cluster Prominence	1.09e+16 (1.13e+15 - 3.03e+16)	6.155e+15 (1.14e+14 - 4.27e+16)	0.688[m]	Original Neighboring Gray Tone Difference Matrix Busyness	0.82 (0.03 - 3.86e+16)	2.24e+15 (0.02 - 3.4e+16)	0.457[m]
Original Gray Level Co-occurrence Matrix Cluster Shade	-5.88e+15 (-3.22e+16 - 4.07e+16)	-5.39e+15 (-3.48e+16 - 1.36e+16)	0.814[m]	Original Neighboring Gray Tone Difference Matrix Complexity	9.11e+15 (2.29e+15 - 7.76e+16)	8.085e+15 (1.9e+14 - 3.57e+16)	0.179[m]
Original Gray Level Co-occurrence Matrix Cluster Tendency	9.72e+15 (4.69e+14 - 3.64e+16)	9.94e+15 (8.13e+14 - 4.13e+16)	0.681[m]	Original Neighboring Gray Tone Difference Matrix Strength	0.74 (0.07 - 2.64e+16)	0.54 (0.05 - 3.25e+16)	0.121[m]
Original Gray Level Co-occurrence Matrix Contrast	7.53e+15 (3.78e+14 - 3.62e+16)	1.07e+16 (5.36e+14 - 4.02e+16)	0.535[m]	Original Gray Level Dependence Matrix Small Dependence Emphasis	0.44 (0.22 - 0.72)	0.4 (0.22 - 0.82)	0.312[m]
Original Gray Level Co-occurrence Matrix Correlation	0.39 (0.21 - 0.45)	0.4 (-0.02 - 0.58)	0.372[m]	Original Gray Level Dependence Matrix Large Dependence Emphasis	8.78e+15 (9.58e+14 - 6.34e+16)	8.055e+15 (7.33e+14 - 2.84e+16)	0.206[m]
Original Gray Level Co-occurrence Matrix Difference Average	6.67e+15 (6.34e+14 - 7.65e+16)	7.31e+15 (8.11e+13 - 7.57e+16)	0.633[m]	Original Gray Level Dependence Matrix Gray Level Non Uniformity	8.09e+15 (2.69e+15 - 3.04e+16)	7.365e+15 (45700 - 4.85e+16)	0.698[m]
Original Gray Level Co-occurrence Matrix Difference Entropy	4.18e+15 (4.03e+14 - 3.92e+16)	4.3e+15 (4.51e+13 - 4.69e+16)	0.122[m]	Original Gray Level Dependence Matrix Dependence Non Uniformity	5.94e+15 (1.37e+15 - 3.9e+16)	7.71e+15 (1.62e+13 - 4.91e+16)	0.678[m]
Original Gray Level Co-occurrence Matrix Difference Variance	7.02e+15 (3.38e+14 - 6.04e+16)	6.685e+15 (3.1e+14 - 4.8e+16)	0.351[m]	Original Gray Level Dependence Matrix Dependence Non Uniformity Normalized	0.25 (0.15 - 0.5)	0.23 (0.11 - 0.63)	0.370[m]
Original Gray Level Co-occurrence Matrix Joint Energy	0 (0 - 0.01)	0 (0 - 0.02)	0.070[m]	Original Gray Level Dependence Matrix Gray Level Variance	7.5e+15 (6.81e+14 - 2.34e+16)	1.3e+16 (1.5e+14 - 5.1e+16)	0.049[m]
Original Gray Level Co-occurrence Matrix Joint Entropy	9.49e+15 (7.67e+15 - 1.04e+16)	8.82e+15 (7.98e+14 - 7.72e+16)	0.947[m]	Original Gray Level Dependence Matrix Dependence Variance	1.58e+16 (0.37 - 2.61e+16)	1.0565e+16 (0.29 - 3.47e+16)	0.603[m]
Original Gray Level Co-occurrence Matrix Informal Measure of Correlation 1	-0.06 (-0.59 - -0.03)	-0.05 (-0.75 - -0.02)	0.725[m]	Original Gray Level Dependence Matrix Dependence Entropy	7.09e+15 (6.35e+14 - 7.4e+16)	6.995e+15 (6.68e+14 - 7.03e+16)	0.385[m]
Original Gray Level Co-occurrence Matrix Informal Measure of Correlation 2	6.44E-01 (1.50E-01)	6.17E-01 (1.44E-01)	0.462[f]	Original Gray Level Dependence Matrix Low Gray Level Emphasis	0.01 (0 - 0.03)	0 (0 - 0.02)	0.296[m]
Original Gray Level Co-occurrence Matrix Inverse Difference Moment	1.66E-01 (5.54E-02)	1.99E-01 (7.51E-02)	0.238[f]	Original Gray Level Dependence Matrix High Gray Level Emphasis	1.12e+16 (1.38e+15 - 1.98e+16)	1.08e+16 (1.41e+15 - 4.93e+16)	0.865[m]
Original Gray Level Co-occurrence Matrix Maximal Correlation Coefficient	0.45 (0.3 - 0.85)	0.49 (0.24 - 0.99)	0.432[m]	Original Gray Level Dependence Matrix Small Dependence Low Gray Level Emphasis	0 (0 - 0.03)	0 (0 - 0.01)	0.145[m]
Original Gray Level Co-occurrence Matrix Inverse Difference Moment Normalized	0.98 (0.93 - 1)	0.99 (0.92 - 1)	0.346[m]	Original Gray Level Dependence Matrix Small Dependence High Gray Level Emphasis	5.16e+15 (3.21e+15 - 4.9e+16)	5.65e+15 (3.84e+14 - 4.62e+16)	0.367[m]
Original Gray Level Co-occurrence Matrix Inverse Difference	2.54E-01 (6.01E-02)	2.86E-01 (7.51E-02)	0.250[f]	Original Gray Level Dependence Matrix Large Dependence Low Gray Level Emphasis	0.01 (0.01 - 0.03)	0.01 (0.01 - 0.27)	0.464[m]
Original Gray Level Co-occurrence Matrix Inverse Difference Normalized	0.92 (0.83 - 0.95)	0.92 (0.81 - 0.97)	0.252[m]	Original Gray Level Dependence Matrix Large Dependence High Gray Level Emphasis	7.5e+15 (7.51e+14 - 3.38e+16)	7.575e+15 (1.01e+14 - 4.02e+16)	0.685[m]
Original Gray Level Co-occurrence Matrix Inverse Variance	1.71E-01 (5.75E-02)	2.04E-01 (7.40E-02)	0.250[f]				

[m]: Mann-Whitney U Test, [f]: T-Test for Equal Variance, [*]: T-Test for Unequal Variance, *: Mean (SD) for T-Test and Median (Min-Max) for Mann-Whitney U Test

4.2.2 Rim Alanı Texture Analiz Değerlendirmesi

ALK rearranjmanı saptanan tümörlerin yakın perilezyonel alandan (rim) yapılan texture analiz verileri değerlendirildiğinde; birinci derece ikinci derece ve yüksek derece parametrelerden;**GLCM Sum Entrophy** parametresi ortalama değeri (p=0.026),**GLRLM Low Gray Level Run Emphasis** parametresi ortalama değeri (p=0.022), **GLRLM High Gray Level Run Emphasis** parametresi ortalama değeri (p<0.001)**GLRLM Short Run Low Gray Level Emphasis** parametresi ortalama değeri (p=0.022), **NGTDM Contrast** parametresi ortalama değeri (p= 0.022),**NGTDM Busyness** parametresi ortalama değeri (p=0.005), **GLDM Low Gray Level Emphasis** parametresi ortalama değeri (p=0.022)**GLDM High Gray Level Emphasis** parametresi ortalama değeri (p=0.002)**GLDM Large Dependence Low Gray Level Emphasis** parametresi ortalama değeri (p=0.022), daha düşük saptanmış olup istatistiksel olarak anlamlıdır (p<0.005) (Tablo 13).

Kurtozis parametresi ortalama değeri (p=0.023),**GLCM Inverse Difference Moment Normalized** parametresi ortalama değeri (p=0.016), **GLSZM Large Area Emphasis** parametresi ortalama değeri (p=0.048) ALK rearranjmanı saptanan lezyonların rim alanı ölçümlerinde daha yüksek saptanmış olup istatistiksel olarak anlamlıdır (p<0.05) (Tablo 13).

Tablo 13:ALK rearranjmanı olan tümörlerim rim alanı texture analiz parametreleri

Variable	Descriptive Value for 0*	Descriptive Value for 1*	Test P-value	Variable	Descriptive Value for 0	Descriptive Value for 1	Test P-value
Original Shape Mesh Volume	7.3e+15 (4.42e+09 - 3.97e+16)	8.36e+15 (1.12e+15 - 7.41e+16)	0.379[m]	Original Gray Level Co-occurrence Matrix Maximum Probability	0.01 (0 - 0.09)	0.01 (0.01 - 0.01)	0.621[m]
Original Shape Voxel Volume	7.77e+15 (6.44e+08 - 5.85e+16)	8.74e+15 (8.71e+14 - 3.33e+16)	0.990[m]	Original Gray Level Co-occurrence Matrix Sum Average	5.01e+15 (3.35e+14 - 5.5e+16)	2.93e+16 (3.35e+15 - 4.76e+16)	0.237[m]
Original Shape Surface Area	8.895e+15 (1.95e+14 - 6.39e+16)	1.03e+16 (9.11e+14 - 3.69e+16)	0.890[m]	Original Gray Level Co-occurrence Matrix Sum Entropy	5.765e+15 (5.52e+13 - 6.19e+16)	5.6e+15 (5.62e+14 - 5.98e+15)	0.026[m]
Original Shape Surface Area to Volume Ratio	1.14e+16 (0.81 - 3.16e+16)	1.21e+16 (1.28e+15 - 1.47e+16)	0.295[m]	Original Gray Level Co-occurrence Matrix Sum of Squares	1.035e+16 (6.55e+14 - 6e+16)	8.21e+15 (6.17e+15 - 6.11e+16)	0.505[m]
Original Shape Sphericity	0.21 (0.13 - 0.44)	0.26 (0.19 - 0.38)	0.242[m]	Original Gray Level Run Length Matrix Short Run Emphasis	9.80E-01 (8.09E-03)	9.81E-01 (4.30E-03)	0.911[f]
Original Shape Compactness 1	0.01 (0 - 0.02)	0.01 (0 - 0.01)	0.285[m]	Original Gray Level Run Length Matrix Long Run Emphasis	1.07e+16 (1.09e+14 - 1.25e+16)	1.07e+16 (1.09e+15 - 1.11e+16)	0.834[m]
Original Shape Compactness 2	0.01 (0 - 0.08)	0.02 (0.01 - 0.05)	0.457[m]	Original Gray Level Run Length Matrix Gray Level Non Uniformity	7.74e+15 (5.24e+13 - 3.35e+16)	1.68e+16 (7.17e+14 - 4.05e+16)	0.304[m]
Original Shape Spherical Disproportion	4.725e+15 (6.08e+12 - 5.09e+16)	3.17e+16 (4.57e+15 - 5.1e+16)	0.001[m]	Original Gray Level Run Length Matrix Gray Level Non Uniformity Normalized	0.03 (0.02 - 0.06)	0.04 (0.03 - 0.04)	0.690[m]
Original Shape Maximum 3D Diameter	7.44e+15 (4.06e+14 - 5.91e+16)	6.52e+15 (8.27e+13 - 5.85e+16)	0.582[m]	Original Gray Level Run Length Matrix Run Length Non Uniformity	6.78e+15 (5.01e+14 - 3.95e+16)	7.11e+15 (1.86e+15 - 5.99e+16)	0.477[m]
Original Shape Maximum 2D Diameter Slice	6.115e+15 (9.56e+13 -	6.02e+15 (3.98e+15 -	0.610[m]	Original Gray Level Run Length Matrix Run Length Non	9.50E-01 (1.96E-02)	9.51E-01 (1.08E-02)	0.838[f]

	5.23e+16)	2.42e+16)		Uniformity Normalized			
Original Shape Maximum 2D Diameter Column	5.95e+15 (4.26e+13 - 5.31e+16)	4.22e+15 (2.2e+14 - 6.1e+16)	0.815[m]	Original Gray Level Run Length Matrix Run Percentage	9.73E-01 (1.15E-02)	9.75E-01 (5.67E-03)	0.862[f]
Original Shape Maximum 2D Diameter Row	6.185e+15 (3.95e+13 - 5.96e+16)	5.52e+15 (2.08e+15 - 8.24e+15)	0.393[m]	Original Gray Level Run Length Matrix Gray Level Variance	1.07e+16 (1.11e+15 - 6.36e+16)	8.69e+15 (6.87e+15 - 1.18e+16)	0.434[m]
Original Shape Major Axis Length	6.935e+15 (4.01e+13 - 6.19e+16)	8.31e+15 (2.53e+15 - 5.68e+16)	0.200[m]	Original Gray Level Run Length Matrix Run Variance	0.03 (0.01 - 0.11)	0.03 (0.02 - 0.04)	0.693[m]
Original Shape Minor Axis Length	6.07e+15 (6.33e+12 - 6.12e+16)	1.94e+16 (4.94e+14 - 3.85e+16)	0.788[m]	Original Gray Level Run Length Matrix Run Entropy	5.395e+15 (4.97e+14 - 5.75e+16)	5.33e+15 (5.29e+14 - 5.23e+16)	0.451[m]
Original Shape Least Axis Length	9.74e+15 (2.51e+14 - 3.69e+16)	1.81e+16 (1.71e+15 - 4.03e+16)	0.347[m]	Original Gray Level Run Length Matrix Low Gray Level Run Emphasis	0.01 (0 - 0.22)	0.01 (0.01 - 0.03)	0.022[m]
Original Shape Elongation	6.88E-01 (1.53E-01)	6.58E-01 (1.25E-01)	0.581[f]	Original Gray Level Run Length Matrix High Gray Level Run Emphasis	7.585e+15 (1.36e+15 - 4.8e+16)	4.07e+15 (4.36e+14 - 7.14e+15)	<0.001[m]
Original Shape Flatness	4.19E-01 (1.61E-01)	3.46E-01 (1.29E-01)	0.257[f]	Original Gray Level Run Length Matrix Short Run Low Gray Level Emphasis	0.01 (0 - 0.19)	0.01 (0.01 - 0.02)	0.022[m]
Original First Order Energy	1.675e+09 (1.79e+08 - 9.81e+09)	8.23e+08 (3.75e+08 - 2.87e+09)	0.283[m]	Original Gray Level Run Length Matrix Short Run High Gray Level Emphasis	6.29e+15 (3.83e+14 - 4.74e+16)	5.21e+15 (3.67e+15 - 3.09e+16)	0.724[m]
Original First Order Total Energy	8.595e+15 (1.56e+09 - 4.3e+16)	4.12e+15 (2.27e+15 - 2.78e+16)	0.512[m]	Original Gray Level Run Length Matrix Long Run Low Gray Level Emphasis	0.01 (0 - 0.38)	0.01 (0.01 - 0.03)	0.321[m]
Original First Order Entropy	5.195e+15 (4.9e+14 - 5.4e+16)	5.11e+15 (5.4e+14 - 4.96e+16)	0.817[m]	Original Gray Level Run Length Matrix Long Run High Gray Level Emphasis	6.89e+15 (1.04e+15 - 4.75e+16)	5.45e+15 (3.32e+15 - 4.7e+16)	0.741[m]
Original First Order Minimum	-1020 (-1240 - -887)	-1020 (-1140 - -892)	0.513[m]	Original Gray Level Size Zone Matrix Small Area Emphasis	8.26E-01 (4.29E-02)	8.19E-01 (2.61E-02)	0.862[f]
Original First Order 10th Percentile	-877.5 (-1020 - -662)	-869 (-892 - -727)	0.572[m]	Original Gray Level Size Zone Matrix Large Area Emphasis	1.185e+16 (1.63e+15 - 3.48e+16)	2.32e+16 (4.04e+09 - 3.41e+16)	0.048[m]
Original First Order 90th Percentile	-419.5 (-4.29e+16 - 3.8e+15)	-3.96e+15 (-4.67e+16 - -347)	0.072[m]	Original Gray Level Size Zone Matrix Gray Level Non Uniformity	9.655e+15 (9.46e+14 - 4.5e+16)	1.06e+16 (1.84e+08 - 6.05e+16)	0.427[m]
Original First Order Maximum	3.26E+02 (2.36E+02)	3.27E+02 (2.43E+02)	1.000[f]	Original Gray Level Size Zone Matrix Gray Level Non Uniformity Normalized	2.93E-02 (4.86E-03)	3.14E-02 (3.35E-03)	0.232[f]
Original First Order Mean	-6.3e+15 (-3.96e+16 - -3.9e+15)	-5.44e+15 (-7.07e+15 - -7010000)	0.224[m]	Original Gray Level Size Zone Matrix Size Zone Non Uniformity	1.265e+16 (5.6e+14 - 4.02e+16)	6.6e+15 (2.91e+09 - 2.7e+16)	0.143[m]
Original First Order Median	-6.50E+02 (1.28E+02)	-6.62E+02 (9.21E+01)	0.906[f]	Original Gray Level Size Zone Matrix Size Zone Non Uniformity Normalized	6.41E-01 (7.31E-02)	6.28E-01 (4.27E-02)	0.886[f]
Original First Order Interquartile Range	264 (167 - 479)	251 (205 - 324)	0.244[m]	Original Gray Level Size Zone Matrix Zone Percentage	7.29E-01 (8.16E-02)	7.25E-01 (5.04E-02)	0.963[f]
Original First Order Range	1.37E+03 (2.73E+02)	1.35E+03 (2.88E+02)	0.938[f]	Original Gray Level Size Zone Matrix Gray Level Variance	1.09e+16 (7.89e+13 - 1.98e+16)	9.1e+15 (9.51e+11 - 1.29e+16)	0.101[m]
Original First Order Mean Absolute Deviation	1.6e+16 (1.32e+15 - 2.76e+16)	1.35e+16 (1.28e+10 - 1.94e+16)	0.158[m]	Original Gray Level Size Zone Matrix Zone Variance	0.84 (0.11 - 3.56e+16)	1.04e+16 (0.48 - 1.68e+16)	0.386[m]
Original First Order Robust Mean Absolute Deviation	1.105e+16 (7.01e+14 - 2.06e+16)	8.95e+15 (1.11e+15 - 1.35e+16)	0.473[m]	Original Gray Level Size Zone Matrix Zone Entropy	6.28e+15 (6.29e+13 - 6.13e+16)	6.21e+15 (6.13e+15 - 6.36e+15)	0.864[m]
Original First Order Root Mean Squared	6.535e+15 (5.33e+14 - 5.03e+16)	6.86e+15 (5.44e+15 - 7.29e+15)	0.667[m]	Original Gray Level Size Zone Matrix Low Gray Level Zone Emphasis	0.01 (0 - 0.07)	0.01 (0.01 - 0.02)	0.071[m]
Original First Order Standard Deviation	1.46e+16 (1.93e+14 - 3.38e+16)	1.48e+16 (1.63e+15 - 2.44e+16)	0.943[m]	Original Gray Level Size Zone Matrix High Gray Level Zone Emphasis	6.695e+15 (4.41e+14 - 3.99e+16)	4.64e+15 (4.96e+08 - 7.38e+15)	0.150[m]
Original First Order Skewness	0.93 (-0.13 - 1.63e+16)	1.08e+16 (0.52 - 1.57e+16)	0.090[m]	Original Gray Level Size Zone Matrix Small Area Low Gray Level Emphasis	0.01 (0 - 0.04)	0.01 (0.01 - 0.02)	0.141[m]
Original First Order Kurtosis	2.605e+16 (2.22e+15 - 5.98e+16)	4.84e+15 (3.21e+15 - 3.29e+16)	0.023[m]	Original Gray Level Size Zone Matrix Small Area High Gray Level Emphasis	6.99e+15 (3.06e+14 - 5.05e+16)	6.41e+15 (4.21e+14 - 4.05e+16)	0.668[m]
Original First Order Variance	6.42e+15 (3.2e+14 - 5.44e+16)	2.2e+16 (2.65e+12 - 4.72e+16)	0.071[m]	Original Gray Level Size Zone Matrix Large Area Low Gray Level Emphasis	0.03 (0 - 4.92e+16)	0.02 (0.01 - 0.1)	0.458[m]
Original First Order Uniformity	0.03 (0.02 - 0.07)	0.04 (0.03 - 0.04)	0.839[m]	Original Gray Level Size Zone Matrix Large Area High Gray Level Emphasis	1.10E+16 (6.78E+15)	6.05E+15 (5.43E+15)	0.062[f]
Original Gray Level Co-occurrence Matrix Autocorrelation	1.0585e+16 (8.04e+14 - 4.6e+16)	2.51e+16 (2.31e+15 - 3.58e+16)	0.635[m]	Original Neighboring Gray Tone Difference Matrix Coarseness	0 (0 - 0.01)	0 (0 - 0.01)	0.281[m]
Original Gray Level Co-occurrence Matrix Joint Average	1.725e+16 (1.74e+14 - 3.42e+16)	1.68e+16 (1.82e+15 - 2.38e+16)	0.933[m]	Original Neighboring Gray Tone Difference Matrix Contrast	0.34 (0.15 - 0.86)	0.25 (0.21 - 0.4)	0.022[m]
Original Gray Level Co-occurrence Matrix Cluster Prominence	8.03e+15 (3.18e+14 - 5.03e+16)	1.61e+16 (1.75e+15 - 3.07e+16)	0.801[m]	Original Neighboring Gray Tone Difference Matrix Busyness	0.49 (0.07 - 1.69e+16)	0.22 (0.1 - 0.99)	0.005[m]
Original Gray Level Co-occurrence Matrix Cluster Shade	8.225e+15 (-5.07e+16 - 4.61e+16)	1.8e+16 (2.33e+15 - 3.27e+16)	0.310[m]	Original Neighboring Gray Tone Difference Matrix Complexity	8.895e+15 (9.05e+14 - 7.64e+16)	8.16e+15 (8.76e+14 - 6.99e+16)	0.544[m]
Original Gray Level Co-occurrence Matrix Cluster Tendency	1.755e+16 (1.86e+14 - 4.63e+16)	1.56e+16 (2.45e+14 - 2.89e+16)	0.468[m]	Original Neighboring Gray Tone Difference Matrix Strength	7.48e+15 (0.99 - 4.37e+16)	7.5e+15 (4.79e+14 - 2.01e+16)	0.511[m]

Original Gray Level Co-occurrence Matrix Contrast	1.16E+16 (7.35E+15)	9.01E+15 (4.19E+15)	0.410[f]	Original Gray Level Dependence Matrix Small Dependence Emphasis	6.57E-01 (8.72E-02)	6.49E-01 (5.39E-02)	0.963[f]
Original Gray Level Co-occurrence Matrix Correlation	3.33E-01 (1.04E-01)	3.26E-01 (5.12E-02)	0.862[f]	Original Gray Level Dependence Matrix Large Dependence Emphasis	8.32e+15 (1.97e+14 - 3.98e+16)	4.09e+15 (31000 - 3.86e+16)	0.494[m]
Original Gray Level Co-occurrence Matrix Difference Average	8.41e+15 (6.86e+14 - 7.82e+16)	7.16e+15 (6.46e+15 - 9.44e+15)	0.449[m]	Original Gray Level Dependence Matrix Gray Level Non Uniformity	8.8e+15 (44700 - 6.22e+16)	7.47e+15 (41900 - 3.5e+16)	0.754[m]
Original Gray Level Co-occurrence Matrix Difference Entropy	4.505e+15 (4.15e+14 - 5.03e+16)	4.36e+15 (4.23e+15 - 4.1e+16)	0.832[m]	Original Gray Level Dependence Matrix Dependence Non Uniformity	9.08e+15 (1.78e+14 - 5.1e+16)	2.49e+15 (5760000 - 2.63e+16)	0.235[m]
Original Gray Level Co-occurrence Matrix Difference Variance	6.685e+15 (4e+14 - 5.25e+16)	5.43e+15 (3.45e+15 - 4.12e+16)	0.727[m]	Original Gray Level Dependence Matrix Dependence Non Uniformity Normalized	0.41 (0.29 - 0.71)	0.39 (0.34 - 0.48)	0.718[m]
Original Gray Level Co-occurrence Matrix Joint Energy	0 (0 - 0.01)	0 (0 - 0)	0.817[m]	Original Gray Level Dependence Matrix Gray Level Variance	1.055e+16 (1.39e+14 - 5.65e+16)	8.6e+15 (8.59e+14 - 1.18e+16)	0.348[m]
Original Gray Level Co-occurrence Matrix Joint Entropy	9.38e+15 (9.17e+13 - 7.76e+16)	9.23e+15 (8.41e+15 - 9.6e+15)	0.754[m]	Original Gray Level Dependence Matrix Dependence Variance	0.82 (0.17 - 1.84e+16)	0.85 (0.48 - 1.07e+16)	0.407[m]
Original Gray Level Co-occurrence Matrix Informal Measure of Correlation 1	-0.13 (-0.53 - -0.04)	-0.19 (-0.24 - -0.06)	0.923[m]	Original Gray Level Dependence Matrix Dependence Entropy	6.615e+15 (6.2e+14 - 6.51e+16)	6.52e+15 (6.39e+15 - 6.6e+15)	0.496[m]
Original Gray Level Co-occurrence Matrix Informal Measure of Correlation 2	8.37E-01 (1.17E-01)	8.69E-01 (1.10E-01)	0.500[f]	Original Gray Level Dependence Matrix Low Gray Level Emphasis	0.01 (0 - 0.25)	0.01 (0.01 - 0.03)	0.022[m]
Original Gray Level Co-occurrence Matrix Inverse Difference Moment	1.32E-01 (3.03E-02)	1.42E-01 (2.02E-02)	0.410[f]	Original Gray Level Dependence Matrix High Gray Level Emphasis	6.335e+15 (6.55e+14 - 4.46e+16)	4.03e+15 (5210000 - 7.12e+15)	0.002[m]
Original Gray Level Co-occurrence Matrix Maximal Correlation Coefficient	0.54 (0.38 - 0.89)	0.62 (0.43 - 0.8)	0.301[m]	Original Gray Level Dependence Matrix Small Dependence Low Gray Level Emphasis	0.01 (0 - 0.04)	0.01 (0 - 0.01)	0.074[m]
Original Gray Level Co-occurrence Matrix Inverse Difference Moment Normalized	0.97 (0.94 - 0.98)	0.98 (0.97 - 0.98)	0.016[m]	Original Gray Level Dependence Matrix Small Dependence High Gray Level Emphasis	6.58e+15 (2.95e+14 - 4.81e+16)	5.31e+15 (2.8e+14 - 4.27e+16)	0.922[m]
Original Gray Level Co-occurrence Matrix Inverse Difference	2.16E-01 (3.34E-02)	2.29E-01 (2.20E-02)	0.296[f]	Original Gray Level Dependence Matrix Large Dependence Low Gray Level Emphasis	0.03 (0 - 1.68e+16)	0.03 (0.01 - 0.13)	0.024[m]
Original Gray Level Co-occurrence Matrix Inverse Difference Normalized	8.90E-01 (2.05E-02)	9.02E-01 (1.11E-02)	0.131[f]	Original Gray Level Dependence Matrix Large Dependence High Gray Level Emphasis	1.14e+16 (1.48e+14 - 3.87e+16)	1.06e+16 (1.1e+07 - 1.72e+16)	0.769[m]
Original Gray Level Co-occurrence Matrix Inverse Variance	1.32E-01 (2.91E-02)	1.47E-01 (1.96E-02)	0.147[f]				

[m]: Mann-Whitney U Test, [f]: T-Test for Equal Variance, [g]: T-Test for Unequal Variance, *: Mean (SD) for T-Test and Median (Min-Max) for Mann-Whitney U Test

EGFR mutasyonu saptanan lezyonlarda rim alanına ait texture analiz parametreleri değerlendirildiğinde;**Maximum** parametresi ortalama değeri (p=0.009),**Interquartile range** parametresi ortalama değeri (p=0.003),**Range** parametresi ortalama değeri (p=0.027), **Kurtozis** parametresi ortalama değeri (p=0.005),**GLCM Difference Entrophy** parametresi ortalama değeri (p=0.022),**GLRLM Low Gray Level Run Emphasis** parametresi ortalama değeri (p=0.003), **GLRLM Short Run Low Gray Level Run Emphasis**parametresi ortalama değeri (p=0.003),**GLRLM Long Run Low Gray Level Run Emphasis**parametresi ortalama değeri(p=0.009)**, GLSZM Low Gray Level Zone Emphasis**parametresi ortalama değeri (p=0.001),**GLSZM High Gray Level Zone Emphasis** parametresi ortalama değeri (p=0.037),**GLSZM Small Area Low Gray Level Emphasis** parametresi ortalama değeri (p=0.005),**NGTDM Busyness** parametresi ortalama değeri (p=0.005),**GLDM Low Gray Level Emphasis** parametresi ortalama değeri (p=0.004), **GLDM Small Dependence Low Gray Level Emphasis** parametresi ortalama değeri (p=0.004),**GLDM Large Dependence**

Low Gray Level Emphasis parametresi ortalama değeri (p=0.023) EGFR mutasyonu saptanmayan lezyonlara göre daha düşük,**Energy** parametresi ortalama değeri (p=0.037),**Mean Absolute Deviation** parametresi ortalama değeri (p=0.030) ise daha yüksektir. İstatistiksel olarak anlamlıdır (p<0.05) (Tablo 14).

Tablo 14:EGFR mutasyonu olan tümörlerim rim alanı texture analiz parametreleri

Variable	Descriptive Value for 0*	Descriptive Value for 1*	Test P-value	Variable	Descriptive Value for 0	Descriptive Value for 1	Test P-value
Original Shape Mesh Volume	8.005e+15 (4.42e+09 - 7.41e+16)	5.31e+15 (3.33e+15 - 2.1e+16)	0.225[m]	Original Gray Level Co-occurrence Matrix Maximum Probability	0.01 (0 - 0.09)	0.01 (0.01 - 0.01)	0.412[m]
Original Shape Voxel Volume	8.135e+15 (6.44e+08 - 3.33e+16)	1.06e+16 (1.09e+12 - 5.85e+16)	0.141[m]	Original Gray Level Co-occurrence Matrix Sum Average	5.51e+15 (3.35e+14 - 5.5e+16)	4.43e+15 (4.72e+14 - 4.55e+16)	0.983[m]
Original Shape Surface Area	9.045e+15 (1.95e+14 - 3.69e+16)	9.31e+15 (1.36e+15 - 6.39e+16)	0.138[m]	Original Gray Level Co-occurrence Matrix Sum Entropy	5.755e+15 (5.52e+13 - 6.19e+16)	5.7e+15 (5.68e+14 - 5.92e+16)	0.217[m]
Original Shape Surface Area to Volume Ratio	1.18e+16 (0.81 - 3.16e+16)	1.44e+15 (0.85 - 1.53e+16)	0.084[m]	Original Gray Level Co-occurrence Matrix Sum of Squares	9.885e+15 (9.28e+14 - 6.11e+16)	8.78e+15 (6.55e+14 - 5.9e+16)	0.818[m]
Original Shape Sphericity	0.21 (0.13 - 0.43)	0.24 (0.17 - 0.44)	0.238[m]	Original Gray Level Run Length Matrix Short Run Emphasis	9.80E-01 (8.11E-03)	9.82E-01 (5.90E-03)	0.247[f]
Original Shape Compactness 1	0.01 (0 - 0.01)	0.01 (0 - 0.02)	0.258[m]	Original Gray Level Run Length Matrix Long Run Emphasis	1.08e+16 (1.09e+14 - 1.25e+16)	1.07e+16 (1.07e+15 - 1.12e+16)	0.255[m]
Original Shape Compactness 2	0.01 (0 - 0.08)	0.01 (0.01 - 0.08)	0.311[m]	Original Gray Level Run Length Matrix Gray Level Non Uniformity	6.5e+15 (5.24e+13 - 4.05e+16)	1.31e+16 (6.08e+14 - 2.26e+16)	0.981[m]
Original Shape Spherical Disproportion	5.89e+15 (6.08e+12 - 5.1e+16)	4.24e+15 (2.29e+15 - 5.76e+15)	<0.001[m]	Original Gray Level Run Length Matrix Gray Level Non Uniformity Normalized	0.03 (0.02 - 0.06)	0.03 (0.03 - 0.05)	0.819[m]
Original Shape Maximum 3D Diameter	8.07e+15 (8.27e+13 - 5.85e+16)	6.98e+15 (4.06e+14 - 5.91e+16)	0.466[m]	Original Gray Level Run Length Matrix Run Length Non Uniformity	7.74e+15 (8.65e+14 - 5.99e+16)	4.52e+15 (5.01e+14 - 3.94e+16)	0.593[m]
Original Shape Maximum 2D Diameter Slice	5.97e+15 (9.56e+13 - 5.09e+16)	6.18e+15 (3.4e+15 - 5.23e+16)	0.301[m]	Original Gray Level Run Length Matrix Run Length Non Uniformity Normalized	9.48E-01 (1.97E-02)	9.55E-01 (1.44E-02)	0.259[f]
Original Shape Maximum 2D Diameter Column	6.57e+15 (4.26e+13 - 6.1e+16)	4.95e+15 (5.75e+14 - 4.7e+16)	0.444[m]	Original Gray Level Run Length Matrix Run Percentage	9.72E-01 (1.17E-02)	9.77E-01 (7.67E-03)	0.259[f]
Original Shape Maximum 2D Diameter Row	6.265e+15 (3.95e+13 - 5.47e+16)	5.93e+15 (3.37e+14 - 5.96e+16)	0.935[m]	Original Gray Level Run Length Matrix Gray Level Variance	1.07e+16 (1.11e+15 - 1.83e+16)	9.42e+15 (1.28e+15 - 6.36e+16)	0.628[m]
Original Shape Major Axis Length	7.92e+15 (4.01e+13 - 5.81e+16)	6.73e+15 (3.66e+14 - 6.19e+16)	0.389[m]	Original Gray Level Run Length Matrix Run Variance	0.03 (0.01 - 0.11)	0.02 (0.01 - 0.04)	0.195[m]
Original Shape Minor Axis Length	6.575e+15 (6.33e+12 - 6.12e+16)	7.59e+15 (3.29e+14 - 5.14e+16)	0.348[m]	Original Gray Level Run Length Matrix Run Entropy	5.35e+15 (5.18e+14 - 5.75e+16)	5.36e+15 (4.97e+14 - 5.04e+16)	0.988[m]
Original Shape Least Axis Length	1.335e+16 (2.51e+14 - 4.03e+16)	6.06e+15 (3.34e+14 - 3.67e+16)	0.565[m]	Original Gray Level Run Length Matrix Low Gray Level Run Emphasis	0.02 (0 - 0.22)	0 (0 - 0.02)	0.003[m]
Original Shape Elongation	6.94E-01 (1.42E-01)	6.58E-01 (1.67E-01)	0.561[f]	Original Gray Level Run Length Matrix High Gray Level Run Emphasis	7.105e+15 (4.36e+14 - 4.8e+16)	6.47e+15 (3.19e+15 - 3.9e+16)	0.126[m]
Original Shape Flatness	4.00E-01 (1.57E-01)	4.27E-01 (1.64E-01)	0.531[f]	Original Gray Level Run Length Matrix Short Run Low Gray Level Emphasis	0.02 (0 - 0.19)	0 (0 - 0.02)	0.003[m]
Original First Order Energy	1.54e+09 (2e+08 - 9.81e+09)	9.94e+08 (1.79e+08 - 2.76e+09)	0.037[m]	Original Gray Level Run Length Matrix Short Run High Gray Level Emphasis	5.83e+15 (1.07e+15 - 4.74e+16)	6.38e+15 (3.83e+14 - 3.15e+16)	0.449[m]
Original First Order Total Energy	4.57e+15 (1.56e+09 - 4.3e+16)	1.48e+16 (1.65e+14 - 2.87e+16)	0.528[m]	Original Gray Level Run Length Matrix Long Run Low Gray Level Emphasis	0.02 (0 - 0.38)	0 (0 - 0.02)	0.009[m]
Original First Order Entropy	5.15e+15 (5.31e+14 - 4.96e+16)	5.25e+15 (4.9e+14 - 5.4e+16)	0.528[m]	Original Gray Level Run Length Matrix Long Run High Gray Level Emphasis	6.765e+15 (1.04e+15 - 4.75e+16)	6.82e+15 (3.33e+15 - 4.19e+16)	0.246[m]
Original First Order Minimum	-1020 (-1180 - -892)	-1020 (-1240 - -887)	0.705[m]	Original Gray Level Size Zone Matrix Small Area Emphasis	8.22E-01 (4.15E-02)	8.31E-01 (3.91E-02)	0.423[f]
Original First Order 10th Percentile	-8.69E+02 (9.22E+01)	-8.29E+02 (7.09E+01)	0.173[f]	Original Gray Level Size Zone Matrix Large Area Emphasis	9.96e+15 (4.04e+09 - 3.43e+16)	1.93e+16 (2.5e+15 - 3.48e+16)	0.190[m]
Original First Order 90th Percentile	-424 (-4.67e+16 - 3.8e+15)	-497 (-3.76e+16 - -321)	0.872[m]	Original Gray Level Size Zone Matrix Gray Level Non Uniformity	9.655e+15 (1.84e+08 - 6.05e+16)	1.16e+16 (9.46e+14 - 3.8e+16)	0.758[m]
Original First Order Maximum	3.84E+02 (2.27E+02)	1.84E+02 (1.95E+02)	0.009[f]	Original Gray Level Size Zone Matrix Gray Level Non Uniformity Normalized	2.91E-02 (4.66E-03)	3.10E-02 (4.68E-03)	0.259[f]
Original First Order Mean	-6.15e+15 (-3.96e+16 - -7010000)	-6.27e+15 (-7.3e+15 - -5.19e+15)	0.765[m]	Original Gray Level Size Zone Matrix Size Zone Non Uniformity	9.765e+15 (2.91e+09 - 4.02e+16)	1.66e+16 (3.1e+15 - 2.83e+16)	0.853[m]

Original First Order Median	-6.49E+02 (1.38E+02)	-6.58E+02 (7.30E+01)	0.764[g]	Original Gray Level Size Zone Matrix Size Zone Non Uniformity Normalized	0.62 (0.54 - 0.83)	0.64 (0.55 - 0.77)	0.546[m]
Original First Order Interquartile Range	287 (205 - 479)	219 (167 - 372)	0.003[m]	Original Gray Level Size Zone Matrix Zone Percentage	7.21E-01 (7.92E-02)	7.45E-01 (7.18E-02)	0.314[f]
Original First Order Range	1.42E+03 (2.50E+02)	1.23E+03 (2.88E+02)	0.027[f]	Original Gray Level Size Zone Matrix Gray Level Variance	1.105e+16 (9.51e+11 - 1.98e+16)	8.81e+15 (7.03e+14 - 1.55e+16)	0.139[m]
Original First Order Mean Absolute Deviation	1.675e+16 (1.28e+10 - 2.76e+16)	1.19e+16 (1.32e+15 - 2.34e+16)	0.030[m]	Original Gray Level Size Zone Matrix Zone Variance	1.635e+15 (0.11 - 3.56e+16)	0.74 (0.19 - 1.89e+16)	0.220[m]
Original First Order Robust Mean Absolute Deviation	1.115e+16 (8.68e+14 - 2.06e+16)	9.37e+15 (7.01e+14 - 1.59e+16)	0.302[m]	Original Gray Level Size Zone Matrix Zone Entropy	6.295e+15 (6.53e+13 - 6.13e+16)	6.17e+15 (6.29e+13 - 6.41e+15)	0.477[m]
Original First Order Root Mean Squared	6.75e+15 (5.33e+14 - 5.03e+16)	6.4e+15 (6.13e+14 - 7.51e+15)	0.274[m]	Original Gray Level Size Zone Matrix Low Gray Level Zone Emphasis	0.01 (0 - 0.07)	0 (0 - 0.02)	0.001[m]
Original First Order Standard Deviation	1.68e+16 (1.93e+14 - 3.38e+16)	2.98e+15 (2.23e+14 - 2.09e+16)	0.116[m]	Original Gray Level Size Zone Matrix High Gray Level Zone Emphasis	6.36e+15 (4.96e+08 - 3.99e+16)	6.19e+15 (6.94e+14 - 9.72e+15)	0.037[m]
Original First Order Skewness	5.615e+14 (-0.13 - 1.63e+16)	0.91 (0.1 - 1.43e+16)	0.146[m]	Original Gray Level Size Zone Matrix Small Area Low Gray Level Emphasis	0.01 (0 - 0.04)	0 (0 - 0.02)	0.005[m]
Original First Order Kurtosis	5.515e+15 (2.22e+15 - 4.78e+16)	3.45e+16 (5.05e+15 - 5.98e+16)	0.005[m]	Original Gray Level Size Zone Matrix Small Area High Gray Level Emphasis	7.455e+15 (3.24e+14 - 5.05e+16)	6.18e+15 (3.06e+14 - 5.01e+16)	0.249[m]
Original First Order Variance	6.42e+15 (2.65e+12 - 5.44e+16)	8.9e+15 (3.2e+14 - 4.37e+16)	0.655[m]	Original Gray Level Size Zone Matrix Large Area Low Gray Level Emphasis	0.05 (0 - 4.92e+16)	0.01 (0.01 - 0.04)	0.087[m]
Original First Order Uniformity	0.03 (0.02 - 0.07)	0.03 (0.03 - 0.05)	0.984[m]	Original Gray Level Size Zone Matrix Large Area High Gray Level Emphasis	9.68E+15 (6.37E+15)	1.15E+16 (7.81E+15)	0.409[f]
Original Gray Level Co-occurrence Matrix Autocorrelation	1.215e+16 (8.04e+14 - 4.22e+16)	8.78e+15 (5.08e+15 - 4.6e+16)	0.342[m]	Original Neighboring Gray Tone Difference Matrix Coarseness	0 (0 - 0.01)	0 (0 - 0.01)	0.083[m]
Original Gray Level Co-occurrence Matrix Joint Average	1.55e+16 (1.03e+15 - 3.42e+16)	2.17e+16 (1.74e+14 - 2.86e+16)	0.090[m]	Original Neighboring Gray Tone Difference Matrix Contrast	0.35 (0.17 - 0.86)	0.31 (0.15 - 0.6)	0.300[m]
Original Gray Level Co-occurrence Matrix Cluster Prominence	9.545e+15 (4.08e+14 - 5.03e+16)	8.68e+15 (3.18e+14 - 5.02e+16)	0.685[m]	Original Neighboring Gray Tone Difference Matrix Busyness	0.58 (0.08 - 1.69e+16)	0.3 (0.07 - 0.63)	0.005[m]
Original Gray Level Co-occurrence Matrix Cluster Shade	9.57e+15 (-5.07e+16 - 4.61e+16)	1.45e+16 (-8.04e+15 - 2.95e+16)	0.993[m]	Original Neighboring Gray Tone Difference Matrix Complexity	9.11e+15 (8.76e+14 - 7.64e+16)	7.45e+15 (9.05e+14 - 1.06e+16)	0.270[m]
Original Gray Level Co-occurrence Matrix Cluster Tendency	1.91e+16 (1.86e+14 - 4.63e+16)	1.67e+16 (1.44e+15 - 3.25e+16)	0.434[m]	Original Neighboring Gray Tone Difference Matrix Strength	7.005e+15 (0.99 - 4.37e+16)	8.45e+15 (2.48e+14 - 2.65e+16)	0.502[m]
Original Gray Level Co-occurrence Matrix Contrast	1.019e+16 (1.4e+12 - 2.83e+16)	1.02e+16 (1.86e+14 - 2.01e+16)	0.493[m]	Original Gray Level Dependence Matrix Small Dependence Emphasis	6.49E-01 (8.44E-02)	6.73E-01 (7.79E-02)	0.328[f]
Original Gray Level Co-occurrence Matrix Correlation	3.43E-01 (9.10E-02)	3.05E-01 (1.12E-01)	0.238[f]	Original Gray Level Dependence Matrix Large Dependence Emphasis	5.645e+15 (31000 - 3.98e+16)	1.9e+16 (2.55e+15 - 3.53e+16)	0.520[m]
Original Gray Level Co-occurrence Matrix Difference Average	7.98e+15 (6.86e+14 - 7.82e+16)	8.37e+15 (9.58e+14 - 6.91e+16)	0.308[m]	Original Gray Level Dependence Matrix Gray Level Non Uniformity	6.915e+15 (41900 - 5.82e+16)	1.35e+16 (44700 - 6.22e+16)	0.187[m]
Original Gray Level Co-occurrence Matrix Difference Entropy	4.53e+15 (4.15e+14 - 5.03e+16)	4.41e+15 (4.42e+14 - 4.65e+15)	0.022[m]	Original Gray Level Dependence Matrix Dependence Non Uniformity	5.77e+15 (5760000 - 3.73e+16)	1.52e+16 (1.78e+14 - 5.1e+16)	0.095[m]
Original Gray Level Co-occurrence Matrix Difference Variance	6.045e+15 (5.07e+14 - 4.83e+16)	7.01e+15 (4e+14 - 5.25e+16)	0.391[m]	Original Gray Level Dependence Matrix Dependence Non Uniformity Normalized	0.39 (0.29 - 0.71)	0.43 (0.31 - 0.62)	0.433[m]
Original Gray Level Co-occurrence Matrix Joint Energy	0 (0 - 0.01)	0 (0 - 0.01)	0.954[m]	Original Gray Level Dependence Matrix Gray Level Variance	9.96e+15 (1.39e+14 - 1.82e+16)	1.05e+16 (9.36e+14 - 5.65e+16)	0.282[m]
Original Gray Level Co-occurrence Matrix Joint Entropy	9.45e+15 (9.36e+14 - 1.05e+16)	9.23e+15 (9.17e+13 - 7.76e+16)	0.497[m]	Original Gray Level Dependence Matrix Dependence Variance	0.88 (0.17 - 1.84e+16)	0.7 (0.28 - 1.38e+16)	0.707[m]
Original Gray Level Co-occurrence Matrix Informal Measure of Correlation 1	-0.13 (-0.53 - -0.04)	-0.16 (-0.51 - -0.07)	0.125[m]	Original Gray Level Dependence Matrix Dependence Entropy	6.585e+15 (6.62e+14 - 6.96e+15)	6.55e+15 (6.2e+14 - 6.51e+16)	0.090[m]
Original Gray Level Co-occurrence Matrix Informal Measure of Correlation 2	8.28E-01 (1.20E-01)	8.76E-01 (1.01E-01)	0.172[f]	Original Gray Level Dependence Matrix Low Gray Level Emphasis	0.02 (0 - 0.25)	0 (0 - 0.02)	0.004[m]
Original Gray Level Co-occurrence Matrix Inverse Difference Moment	1.34E-01 (3.02E-02)	1.32E-01 (2.68E-02)	0.757[f]	Original Gray Level Dependence Matrix High Gray Level Emphasis	5.865e+15 (5210000 - 4.46e+16)	5.79e+15 (6.55e+14 - 3.17e+16)	0.516[m]
Original Gray Level Co-occurrence Matrix Maximal Correlation Coefficient	5.51E-01 (1.23E-01)	5.97E-01 (1.42E-01)	0.328[f]	Original Gray Level Dependence Matrix Small Dependence Low Gray Level Emphasis	0.01 (0 - 0.04)	0 (0 - 0.02)	0.004[m]
Original Gray Level Co-occurrence Matrix Inverse Difference Moment Normalized	0.97 (0.94 - 0.98)	0.98 (0.96 - 0.98)	0.399[m]	Original Gray Level Dependence Matrix Small Dependence High Gray Level Emphasis	7.46e+15 (2.8e+14 - 4.81e+16)	6.04e+15 (5.24e+14 - 4.66e+16)	0.968[m]
Original Gray Level Co-occurrence Matrix Inverse Difference	2.18E-01 (3.34E-02)	2.18E-01 (2.97E-02)	0.855[f]	Original Gray Level Dependence Matrix Large Dependence Low Gray Level Emphasis	0.05 (0 - 1.68e+16)	0.02 (0.01 - 0.06)	0.023[m]
Original Gray Level Co-occurrence Matrix Inverse Difference Normalized	0.9 (0.84 - 0.92)	0.89 (0.87 - 0.92)	0.539[m]	Original Gray Level Dependence Matrix Large Dependence High Gray Level Emphasis	1.07e+16 (1.1e+07 - 3.87e+16)	1.35e+16 (1.48e+14 - 2.88e+16)	0.326[m]
Original Gray Level Co-occurrence Matrix Inverse Variance	0.14 (0.08 - 0.2)	0.13 (0.11 - 0.18)	0.685[m]				

[m]: Mann-Whitney U Test, [f]: T-Test for Equal Variance, [g]: T-Test for Unequal Variance, *: Mean (SD) for T-Test and Median (Min-Max) for Mann-Whitney U Test

Wild tip tümörlerde rim alanından elde olunan birinci, ikinci ve yüksek derece texture parametreleri incelendiğinde; **Energy** parametresi ortalama değeri (p=0.018), **GLCM Inverse Difference Moment** parametresi ortalama değeri (p=0.045), **GLRLM High Gray Level Run Emphasis** parametresi ortalama değeri (p=0.006), **GLSZM Gray Level Variance** parametresi ortalama değeri (p=0.009), **GLDM Large Dependence Low Gray Level Emphasis** parametresi ortalama değeri (p=0.022) wild tip tümörlerde daha düşük saptanmış olup istatistiksel olarak anlamlıdır (p<0.05) (Tablo 15).

Maximum parametresi ortalama değeri (p=0.017),**Interquartile Range** parametresi ortalama değeri (p<0.001),**Range** parametresi ortalama değeri (p=0.042), **Mean Absolute Deviation** parametresi ortalama değeri (p=0.002),**GLRLM Low Gray Level Run Emphasis**parametresi ortalama değeri (p=0.005), **GLRLM Short Run Low Gray Level Emphasis** parametresi ortalama değeri (p=0.004), **GLRLM Long Run Low Gray Level Emphasis** parametresi ortalama değeri (p=0.011), **GLSZM Large Area Emphasis** parametresi ortalama değeri (p=0.007), **GLSZM Low Gray Level Zone Emphasis** parametresi ortalama değeri (p=0.002),**GLSZM High Gray Level Zone Emphasis** parametresi ortalama değeri (p=0.011),**GLSZM Small Area Low Gray Level Emphasis** parametresi ortalama değeri (p=0.005),**NGTDM Coarseness** parametresi ortalama değeri (p=0.023), **NGTDM Busyness** parametresi ortalama değeri (p=0.004), **GLDM Low Gray Level Emphasis** parametresi ortalama değeri (p=0.006),**GLDM Small Dependence Low Gray Level Emphasis** parametresi ortalama değeri (p=0.004) wild tip tümörlerde daha yüksek bulunmuş olup istatistiksel olarak anlamlıdır (p<0.05) (Tablo 15).

Tablo 15: Wild tip tümörlerim rim alanı texture analiz parametreleri

Variable	Descriptive Value for 0*	Descriptive Value for 1*	Test P-value	Variable	Descriptive Value for 0	Descriptive Value for 1	Test P-value
Original Shape Mesh Volume	6.845e+15 (1.12e+15 - 7.41e+16)	8e+15 (4.42e+09 - 3.97e+16)	0.876[m]	Original Gray Level Co-occurrence Matrix Maximum Probability	0.01 (0.01 - 0.01)	0.01 (0 - 0.09)	0.219[m]
Original Shape Voxel Volume	8.875e+15 (1.09e+12 - 5.85e+16)	7.53e+15 (6.44e+08 - 2.16e+16)	0.084[m]	Original Gray Level Co-occurrence Matrix Sum Average	5.035e+15 (4.72e+14 - 4.76e+16)	5.12e+15 (3.35e+14 - 5.5e+16)	0.402[m]
Original Shape Surface Area	9.58e+15 (9.11e+14 - 6.39e+16)	8.87e+15 (1.95e+14 - 2.58e+16)	0.063[m]	Original Gray Level Co-occurrence Matrix Sum Entropy	5.675e+15 (5.62e+14 - 5.92e+16)	5.79e+15 (5.52e+13 - 6.19e+16)	0.503[m]
Original Shape Surface Area to Volume Ratio	1.1e+16 (0.85 - 1.53e+16)	1.17e+16 (0.81 - 3.16e+16)	0.304[m]	Original Gray Level Co-occurrence Matrix Sum of Squares	8.495e+15 (6.55e+14 - 6.11e+16)	1.04e+16 (9.28e+14 - 6e+16)	0.784[m]
Original Shape Sphericity	0.24 (0.17 - 0.44)	0.2 (0.13 - 0.43)	0.050[m]	Original Gray Level Run Length Matrix Short Run Emphasis	9.82E-01 (5.33E-03)	9.79E-01 (8.93E-03)	0.256[f]
Original Shape Compactness 1	0.01 (0 - 0.02)	0 (0 - 0.01)	0.067[m]	Original Gray Level Run Length Matrix Long Run Emphasis	1.07e+16 (1.07e+15 - 1.12e+16)	1.09e+16 (1.09e+14 - 1.25e+16)	0.286[m]
Original Shape Compactness 2	0.01 (0.01 - 0.08)	0.01 (0 - 0.08)	0.139[m]	Original Gray Level Run Length Matrix Gray Level Non Uniformity	1.315e+16 (6.08e+14 - 4.05e+16)	6.08e+15 (5.24e+13 - 3.35e+16)	0.246[m]
Original Shape Spherical Disproportion	4.635e+15 (2.29e+15 - 5.1e+16)	5.39e+15 (6.08e+12 - 5.09e+16)	0.891[m]	Original Gray Level Run Length Matrix Gray Level Non Uniformity Normalized	0.03 (0.03 - 0.05)	0.03 (0.02 - 0.06)	0.617[m]
Original Shape Maximum 3D Diameter	6.9e+15 (8.27e+13 - 5.91e+16)	8.64e+15 (1.07e+15 - 5.05e+16)	0.936[m]	Original Gray Level Run Length Matrix Run Length Non Uniformity	4.795e+15 (5.01e+14 - 5.99e+16)	7.76e+15 (8.65e+14 - 3.95e+16)	0.975[m]
Original Shape Maximum 2D Diameter Slice	6.115e+15 (3.4e+15 - 5.23e+16)	5.92e+15 (9.56e+13 - 5.09e+16)	0.416[m]	Original Gray Level Run Length Matrix Run Length Non Uniformity Normalized	9.54E-01 (1.31E-02)	9.47E-01 (2.16E-02)	0.237[f]
Original Shape Maximum 2D Diameter Column	4.585e+15 (2.2e+14 - 6.1e+16)	7.04e+15 (4.26e+13 - 5.31e+16)	0.384[m]	Original Gray Level Run Length Matrix Run Percentage	9.76E-01 (6.94E-03)	9.72E-01 (1.29E-02)	0.246[f]
Original Shape Maximum 2D Diameter Row	5.725e+15 (3.37e+14 - 5.96e+16)	6.64e+15 (3.95e+13 - 5.47e+16)	0.584[m]	Original Gray Level Run Length Matrix Gray Level Variance	8.935e+15 (1.28e+15 - 6.36e+16)	1.15e+16 (1.11e+15 - 1.83e+16)	0.915[m]
Original Shape Major Axis Length	7.7e+15 (3.66e+14 - 6.19e+16)	7.18e+15 (4.01e+13 - 5.81e+16)	0.048[m]	Original Gray Level Run Length Matrix Run Variance	0.02 (0.01 - 0.04)	0.03 (0.01 - 0.11)	0.140[m]
Original Shape Minor Axis Length	1.0245e+16 (3.29e+14 - 5.14e+16)	5.77e+15 (6.33e+12 - 6.12e+16)	0.292[m]	Original Gray Level Run Length Matrix Run Entropy	5.34e+15 (4.97e+14 - 5.23e+16)	5.42e+15 (5.18e+14 - 5.75e+16)	0.574[m]
Original Shape Least Axis Length	9.725e+15 (3.34e+14 - 4.03e+16)	1.19e+16 (2.51e+14 - 3.69e+16)	0.875[m]	Original Gray Level Run Length Matrix Low Gray Level Run Emphasis	0.01 (0 - 0.03)	0.02 (0 - 0.22)	0.005[m]
Original Shape Elongation	6.58E-01 (1.50E-01)	7.03E-01 (1.47E-01)	0.349[f]	Original Gray Level Run Length Matrix High Gray Level Run Emphasis	5.755e+15 (4.36e+14 - 3.9e+16)	1.01e+16 (1.36e+15 - 4.8e+16)	0.006[m]
Original Shape Flatness	3.99E-01 (1.55E-01)	4.15E-01 (1.62E-01)	0.811[f]	Original Gray Level Run Length Matrix Short Run Low Gray Level Emphasis	0.01 (0 - 0.02)	0.02 (0 - 0.19)	0.004[m]
Original First Order Energy	9.58e+08 (1.79e+08 - 2.87e+09)	1.73e+09 (2e+08 - 9.81e+09)	0.018[m]	Original Gray Level Run Length Matrix Short Run High Gray Level Emphasis	5.755e+15 (3.83e+14 - 3.15e+16)	6.2e+15 (1.07e+15 - 4.74e+16)	0.317[m]
Original First Order Total Energy	7.385e+15 (1.65e+14 - 2.87e+16)	4.97e+15 (1.56e+09 - 4.3e+16)	0.922[m]	Original Gray Level Run Length Matrix Long Run Low Gray Level Emphasis	0.01 (0 - 0.03)	0.02 (0 - 0.38)	0.011[m]
Original First Order Entropy	5.155e+15 (4.9e+14 - 5.4e+16)	5.16e+15 (5.31e+14 - 4.95e+16)	0.456[m]	Original Gray Level Run Length Matrix Long Run High Gray Level Emphasis	6.165e+15 (3.32e+15 - 4.7e+16)	7.29e+15 (1.04e+15 - 4.75e+16)	0.254[m]
Original First Order Minimum	-1020 (-1240 - -887)	-1020 (-1180 - -951)	0.977[m]	Original Gray Level Size Zone Matrix Small Area Emphasis	8.27E-01 (3.48E-02)	8.23E-01 (4.53E-02)	0.547[f]
Original First Order 10th Percentile	-869 (-906 - -683)	-892 (-1020 - -662)	0.094[m]	Original Gray Level Size Zone Matrix Large Area Emphasis	2.23e+16 (4.04e+09 - 3.48e+16)	6e+15 (1.63e+15 - 3.43e+16)	0.007[m]
Original First Order 90th Percentile	-1700000000000261 (-4.67e+16 - -321)	-374 (-4.29e+16 - 3.8e+15)	0.160[m]	Original Gray Level Size Zone Matrix Gray Level Non Uniformity	1.11e+16 (1.84e+08 - 6.05e+16)	9.01e+15 (1.48e+15 - 4.5e+16)	0.766[m]
Original First Order Maximum	2.34E+02 (2.18E+02)	3.99E+02 (2.24E+02)	0.017[f]	Original Gray Level Size Zone Matrix Gray Level Non Uniformity Normalized	3.11E-02 (4.17E-03)	2.85E-02 (4.82E-03)	0.055[f]
Original First Order Mean	-6.205e+15 (-7.3e+15 - -7010000)	-6.33e+15 (-3.96e+16 - -3.9e+15)	0.245[m]	Original Gray Level Size Zone Matrix Size Zone Non Uniformity	1.19e+16 (2.91e+09 - 2.83e+16)	1.26e+16 (5.6e+14 - 4.02e+16)	0.206[m]
Original First Order Median	-6.60E+02 (7.78E+01)	-6.45E+02 (1.49E+02)	0.853[g]	Original Gray Level Size Zone Matrix Size Zone Non Uniformity Normalized	6.41E-01 (5.88E-02)	6.36E-01 (7.73E-02)	0.547[f]
Original First Order Interquartile Range	2.34E+02 (5.06E+01)	3.17E+02 (8.22E+01)	<0.001[g]	Original Gray Level Size Zone Matrix Zone Percentage	7.38E-01 (6.45E-02)	7.20E-01 (8.64E-02)	0.337[f]
Original First Order Range	1.27E+03 (2.86E+02)	1.44E+03 (2.41E+02)	0.042[f]	Original Gray Level Size Zone Matrix Gray Level Variance	8.955e+15 (9.51e+11 - 1.55e+16)	1.19e+16 (7.89e+13 - 1.98e+16)	0.009[m]
Original First Order Mean Absolute Deviation	1.265e+16 (1.28e+10 - 2.34e+16)	1.77e+16 (1.81e+15 - 2.76e+16)	0.002[m]	Original Gray Level Size Zone Matrix Zone Variance	0.75 (0.19 - 1.89e+16)	1.32e+15 (0.11 - 3.56e+16)	0.632[m]
Original First Order Robust Mean Absolute Deviation	9.2e+15 (7.01e+14 - 1.59e+16)	1.26e+16 (8.68e+14 - 2.06e+16)	0.173[m]	Original Gray Level Size Zone Matrix Zone Entropy	6.185e+15 (6.29e+13 - 6.41e+15)	6.34e+15 (6.53e+13 - 6.13e+16)	0.439[m]
Original First Order Root Mean Squared	6.585e+15 (6.13e+14 - 7.51e+15)	6.6e+15 (5.33e+14 - 5.03e+16)	0.148[m]	Original Gray Level Size Zone Matrix Low Gray Level Zone Emphasis	0.01 (0 - 0.02)	0.02 (0 - 0.07)	0.002[m]
Original First Order Standard Deviation	8.64e+15 (2.23e+14 - 2.44e+16)	1.87e+16 (1.93e+14 - 3.38e+16)	0.210[m]	Original Gray Level Size Zone Matrix High Gray Level Zone Emphasis	6.045e+15 (4.96e+08 - 9.72e+15)	7.28e+15 (4.41e+14 - 3.99e+16)	0.011[m]
Original First Order Skewness	6.35e+14 (0.1 - 1.57e+16)	0.95 (-0.13 - 1.63e+16)	0.989[m]	Original Gray Level Size Zone Matrix Small Area Low Gray Level Emphasis	0.01 (0 - 0.02)	0.01 (0 - 0.04)	0.005[m]
Original First Order Kurtosis	2.895e+16 (3.21e+15 - 5.98e+16)	5.92e+15 (2.22e+15 - 4.78e+16)	0.256[m]	Original Gray Level Size Zone Matrix Small Area High Gray Level Emphasis	6.295e+15 (3.06e+14 - 5.01e+16)	7.55e+15 (3.24e+14 - 5.05e+16)	0.464[m]
Original First Order Variance	1.27e+16 (2.65e+12 - 4.72e+16)	6.32e+15 (3.78e+14 - 5.44e+16)	0.095[m]	Original Gray Level Size Zone Matrix Large Area Low Gray Level Emphasis	0.02 (0.01 - 0.1)	0.05 (0 - 4.92e+16)	0.086[m]
Original First Order Uniformity	0.03 (0.03 - 0.05)	0.03 (0.02 - 0.07)	0.896[m]	Original Gray Level Size Zone Matrix Large Area High Gray Level Emphasis	9.58E+15 (7.41E+15)	1.07E+16 (6.33E+15)	0.574[f]
Original Gray Level Co-occurrence Matrix Autocorrelation	1.694e+16 (2.31e+15 - 4.6e+16)	1.21e+16 (8.04e+14 -	0.190[m]	Original Neighboring Gray Tone Difference Matrix Coarseness	0 (0 - 0.01)	0 (0 - 0.01)	0.023[m]

		4.22e+16)					
Original Gray Level Co-occurrence Matrix Joint Average	2.095e+16 (1.74e+14 - 2.86e+16)	1.51e+16 (1.03e+15 - 3.42e+16)	0.108[m]	Original Neighboring Gray Tone Difference Matrix Contrast	3.07E-01 (1.29E-01)	4.13E-01 (1.91E-01)	0.058[f]
Original Gray Level Co-occurrence Matrix Cluster Prominence	1.195e+16 (3.18e+14 - 5.02e+16)	7.23e+15 (4.08e+14 - 5.03e+16)	0.853[m]	Original Neighboring Gray Tone Difference Matrix Busyness	0.3 (0.07 - 0.99)	0.62 (0.08 - 1.69e+16)	0.004[m]
Original Gray Level Co-occurrence Matrix Cluster Shade	1.635e+16 (-8.04e+15 - 3.27e+16)	7.04e+15 (-5.07e+16 - 4.61e+16)	0.465[m]	Original Neighboring Gray Tone Difference Matrix Complexity	7.805e+15 (8.76e+14 - 6.99e+16)	9.24e+15 (9.72e+14 - 7.64e+16)	0.795[m]
Original Gray Level Co-occurrence Matrix Cluster Tendency	1.615e+16 (2.45e+14 - 3.25e+16)	1.98e+16 (1.86e+14 - 4.63e+16)	0.193[m]	Original Neighboring Gray Tone Difference Matrix Strength	7.975e+15 (2.48e+14 - 2.65e+16)	6.51e+15 (0.99 - 4.37e+16)	0.895[m]
Original Gray Level Co-occurrence Matrix Contrast	9.70E+15 (5.14E+15)	1.24E+16 (8.07E+15)	0.274[f]	Original Gray Level Dependence Matrix Small Dependence Emphasis	6.65E-01 (6.99E-02)	6.49E-01 (9.20E-02)	0.349[f]
Original Gray Level Co-occurrence Matrix Correlation	3.12E-01 (9.38E-02)	3.47E-01 (9.96E-02)	0.230[f]	Original Gray Level Dependence Matrix Large Dependence Emphasis	5.095e+15 (31000 - 3.86e+16)	6.34e+15 (1.97e+14 - 3.98e+16)	0.930[m]
Original Gray Level Co-occurrence Matrix Difference Average	8.01e+15 (9.58e+14 - 6.91e+16)	8.45e+15 (6.86e+14 - 7.82e+16)	0.529[m]	Original Gray Level Dependence Matrix Gray Level Non Uniformity	1.335e+16 (41900 - 6.22e+16)	6.4e+15 (1.45e+14 - 5.82e+16)	0.332[m]
Original Gray Level Co-occurrence Matrix Difference Entropy	4.385e+15 (4.42e+14 - 4.1e+16)	4.56e+15 (4.15e+14 - 5.03e+16)	0.199[m]	Original Gray Level Dependence Matrix Dependence Non Uniformity	1.135e+16 (5760000 - 5.1e+16)	5.95e+15 (2.58e+14 - 3.73e+16)	0.522[m]
Original Gray Level Co-occurrence Matrix Difference Variance	6.38e+15 (4e+14 - 5.25e+16)	6.58e+15 (5.07e+14 - 4.83e+16)	0.313[m]	Original Gray Level Dependence Matrix Dependence Non Uniformity Normalized	0.43 (0.31 - 0.62)	0.39 (0.29 - 0.71)	0.653[m]
Original Gray Level Co-occurrence Matrix Joint Energy	0 (0 - 0.01)	0 (0 - 0.01)	0.908[m]	Original Gray Level Dependence Matrix Gray Level Variance	8.835e+15 (8.59e+14 - 5.65e+16)	1.06e+16 (1.39e+14 - 1.82e+16)	0.769[m]
Original Gray Level Co-occurrence Matrix Joint Entropy	9.23e+15 (9.17e+13 - 7.76e+16)	9.58e+15 (9.36e+14 - 1.05e+16)	0.444[m]	Original Gray Level Dependence Matrix Dependence Variance	0.72 (0.28 - 1.38e+16)	0.91 (0.17 - 1.84e+16)	0.343[m]
Original Gray Level Co-occurrence Matrix Informal Measure of Correlation 1	-0.17 (-0.51 - -0.06)	-0.13 (-0.53 - -0.04)	0.142[m]	Original Gray Level Dependence Matrix Dependence Entropy	6.525e+15 (6.2e+14 - 6.51e+16)	6.66e+15 (6.62e+14 - 6.96e+15)	0.085[m]
Original Gray Level Co-occurrence Matrix Informal Measure of Correlation 2	0.91 (0.67 - 1)	0.86 (0.55 - 1)	0.106[m]	Original Gray Level Dependence Matrix Low Gray Level Emphasis	0.01 (0 - 0.03)	0.02 (0 - 0.25)	0.006[m]
Original Gray Level Co-occurrence Matrix Inverse Difference Moment	1.36E-01 (2.45E-02)	1.32E-01 (3.25E-02)	0.757[f]	Original Gray Level Dependence Matrix High Gray Level Emphasis	5.505e+15 (5210000 - 3.17e+16)	6.54e+15 (1.83e+15 - 4.46e+16)	0.070[m]
Original Gray Level Co-occurrence Matrix Maximal Correlation Coefficient	0.62 (0.38 - 0.89)	0.5 (0.39 - 0.86)	0.081[m]	Original Gray Level Dependence Matrix Small Dependence Low Gray Level Emphasis	0 (0 - 0.02)	0.01 (0 - 0.04)	0.004[m]
Original Gray Level Co-occurrence Matrix Inverse Difference Moment Normalized	0.98 (0.96 - 0.98)	0.97 (0.94 - 0.98)	0.045[m]	Original Gray Level Dependence Matrix Small Dependence High Gray Level Emphasis	5.765e+15 (2.8e+14 - 4.66e+16)	8.38e+15 (2.95e+14 - 4.81e+16)	0.914[m]
Original Gray Level Co-occurrence Matrix Inverse Difference	2.22E-01 (2.72E-02)	2.15E-01 (3.57E-02)	0.562[f]	Original Gray Level Dependence Matrix Large Dependence Low Gray Level Emphasis	0.02 (0.01 - 0.13)	0.1 (0 - 1.68e+16)	0.022[m]
Original Gray Level Co-occurrence Matrix Inverse Difference Normalized	8.97E-01 (1.52E-02)	8.87E-01 (2.21E-02)	0.181[f]	Original Gray Level Dependence Matrix Large Dependence High Gray Level Emphasis	1.33e+16 (1.1e+07 - 2.88e+16)	1.08e+16 (8.11e+14 - 3.87e+16)	0.497[m]
Original Gray Level Co-occurrence Matrix Inverse Variance	1.41E-01 (2.47E-02)	1.29E-01 (3.04E-02)	0.220[f]				

[m]: Mann-Whitney U Test, [t]: T-Test for Equal Variance, *: T-Test for Unequal Variance, *: Mean (SD) for T-Test and Median (Min-Max) for Mann-Whitney U Test

Uzak metastazı saptanan tümörlerin rim alanından elde olunan birinci, ikinci ve yüksek derece texture parametreleri değerlendirildiğinde;**Entropy** parametresi ortalama değeri (p=0.038),**90th Percentile** parametresi ortalama değeri (p=0.005),**GLCM Sum Entropy** parametresi ortalama değeri (p=0.038)daha düşük saptanmıştır, **Skewness** parametresi ortalama değeri (p=0.017), **Variance** parametresi ortalama değeri (p=0.033), **Uniformity** parametresi ortalama değeri (p=0.029), **GLRLM Non Uniformity** parametresi ortalama değeri (p=0.034), **GLRLM Non Uniformity Normalized** parametresi ortalama değeri (p=0.009),**GLSZM Gray Level Non Uniformity Normalized** parametresi ortalama değeri (p=0.009) daha yüksek saptanmış olup istatistiksel olarak anlamlıdır (p<0.05) (Tablo 16).

Tablo 16: Uzak metastazı saptanan tümörlerim rim alanı texture analiz parametreleri

Variable	Descriptive Value for 0*	Descriptive Value for 1*	Test P-value	Variable	Descriptive Value for 0	Descriptive Value for 1	Test P-value
Original Shape Mesh Volume	9.1e+15 (6e+15 - 3.97e+16)	6.97e+15 (4.42e+09 - 7.41e+16)	0.361[m]	Original Gray Level Co-occurrence Matrix Maximum Probability	0.01 (0 - 0.01)	0.01 (0 - 0.09)	0.332[m]
Original Shape Voxel Volume	7.355e+15 (6.26e+09 - 1.53e+16)	8.29e+15 (6.44e+08 - 5.85e+16)	0.309[m]	Original Gray Level Co-occurrence Matrix Sum Average	5.51e+15 (4.29e+14 - 3.03e+16)	4.51e+15 (3.35e+14 - 5.5e+16)	0.273[m]
Original Shape Surface Area	9.02e+15 (4.79e+14 - 1.81e+16)	9.31e+15 (1.95e+14 - 6.39e+16)	0.332[m]	Original Gray Level Co-occurrence Matrix Sum Entropy	5.93e+15 (6.15e+14 - 6.35e+15)	5.7e+15 (5.52e+13 - 6.19e+16)	0.038[m]
Original Shape Surface Area to Volume Ratio	5.965e+15 (1.25e+14 - 3.16e+16)	1.19e+16 (0.81 - 2.35e+16)	0.974[m]	Original Gray Level Co-occurrence Matrix Sum of Squares	1.06e+16 (9.28e+14 - 1.68e+16)	8.78e+15 (6.55e+14 - 6.11e+16)	0.644[m]
Original Shape Sphericity	0.2 (0.15 - 0.44)	0.22 (0.13 - 0.43)	0.526[m]	Original Gray Level Run Length Matrix Short Run Emphasis	9.83E-01 (7.62E-03)	9.80E-01 (7.58E-03)	0.377[f]
Original Shape Compactness 1	0 (0 - 0.02)	0.01 (0 - 0.01)	0.594[m]	Original Gray Level Run Length Matrix Long Run Emphasis	1.065e+16 (1.02e+15 - 1.14e+16)	1.07e+16 (1.09e+14 - 1.25e+16)	0.820[m]
Original Shape Compactness 2	0.01 (0 - 0.08)	0.01 (0 - 0.08)	0.851[m]	Original Gray Level Run Length Matrix Gray Level Non Uniformity	6.31e+15 (5.24e+13 - 1.76e+16)	8.76e+15 (6.08e+14 - 4.05e+16)	0.034[m]
Original Shape Spherical Disproportion	5.05e+15 (4.73e+14 - 3.96e+16)	5.16e+15 (6.08e+12 - 5.1e+16)	0.208[m]	Original Gray Level Run Length Matrix Gray Level Non Uniformity Normalized	2.85E-02 (5.33E-03)	3.53E-02 (8.34E-03)	0.009[f]
Original Shape Maximum 3D Diameter	6.725e+15 (4.06e+14 - 1.19e+16)	7.7e+15 (8.27e+13 - 5.91e+16)	0.008[m]	Original Gray Level Run Length Matrix Run Length Non Uniformity	6.655e+15 (8.65e+14 - 3.95e+16)	7.11e+15 (5.01e+14 - 5.99e+16)	0.502[m]
Original Shape Maximum 2D Diameter Slice	5.905e+15 (9.06e+14 - 3.13e+16)	6.18e+15 (9.56e+13 - 5.23e+16)	0.452[m]	Original Gray Level Run Length Matrix Run Length Non Uniformity Normalized	9.55E-01 (1.90E-02)	9.49E-01 (1.84E-02)	0.425[f]
Original Shape Maximum 2D Diameter Column	8.57e+15 (9.46e+14 - 5.31e+16)	5.16e+15 (4.26e+13 - 6.1e+16)	0.270[m]	Original Gray Level Run Length Matrix Run Percentage	0.98 (0.96 - 0.99)	0.97 (0.94 - 0.99)	0.345[m]
Original Shape Maximum 2D Diameter Row	6.455e+15 (3.95e+13 - 5.47e+16)	6.05e+15 (3.37e+14 - 5.96e+16)	0.823[m]	Original Gray Level Run Length Matrix Gray Level Variance	1.195e+16 (1.11e+15 - 1.68e+16)	9.42e+15 (1.28e+15 - 6.36e+16)	0.899[m]
Original Shape Major Axis Length	6.355e+15 (1.22e+15 - 5.81e+16)	8.26e+15 (4.01e+13 - 6.19e+16)	0.504[m]	Original Gray Level Run Length Matrix Run Variance	0.02 (0.01 - 0.05)	0.03 (0.01 - 0.11)	0.357[m]
Original Shape Minor Axis Length	5.63e+15 (4.76e+13 - 4.36e+16)	7.29e+15 (6.33e+12 - 6.12e+16)	0.758[m]	Original Gray Level Run Length Matrix Run Entropy	5.47e+15 (5.18e+14 - 5.75e+16)	5.33e+15 (4.97e+14 - 5.23e+16)	0.633[m]
Original Shape Least Axis Length	3.555e+15 (2.51e+14 - 3.6e+16)	1.48e+16 (3.34e+14 - 4.03e+16)	0.273[m]	Original Gray Level Run Length Matrix Low Gray Level Run Emphasis	0.02 (0 - 0.08)	0.01 (0 - 0.22)	0.904[m]
Original Shape Elongation	6.49E-01 (1.95E-01)	6.93E-01 (1.34E-01)	0.580[f]	Original Gray Level Run Length Matrix High Gray Level Run Emphasis	8.18e+15 (3.42e+15 - 3.76e+16)	6.57e+15 (4.36e+14 - 4.8e+16)	0.793[m]
Original Shape Flatness	4.21E-01 (1.46E-01)	4.04E-01 (1.62E-01)	0.712[f]	Original Gray Level Run Length Matrix Short Run Low Gray Level Emphasis	0.02 (0 - 0.07)	0.01 (0 - 0.19)	0.946[m]
Original First Order Energy	1062500000 (2e+08 - 9.81e+09)	1.64e+09 (1.79e+08 - 7.89e+09)	0.751[m]	Original Gray Level Run Length Matrix Short Run High Gray Level Emphasis	7.115e+15 (1.07e+15 - 3.37e+16)	5.77e+15 (3.83e+14 - 4.74e+16)	0.875[m]
Original First Order Total Energy	4.075e+15 (1.2e+14 - 3.63e+16)	9.63e+15 (1.56e+09 - 4.3e+16)	0.249[m]	Original Gray Level Run Length Matrix Long Run Low Gray Level Emphasis	0.02 (0 - 0.11)	0.01 (0 - 0.38)	0.772[m]
Original First Order Entropy	5.35e+15 (5.52e+14 - 5.65e+15)	5.11e+15 (4.9e+14 - 5.4e+16)	0.038[m]	Original Gray Level Run Length Matrix Long Run High Gray Level Emphasis	7.465e+15 (2.58e+15 - 3.63e+16)	6.82e+15 (1.04e+15 - 4.75e+16)	0.490[m]
Original First Order Minimum	-1020 (-1020 - -951)	-1020 (-1240 - -887)	0.077[m]	Original Gray Level Size Zone Matrix Small Area Emphasis	8.33E-01 (5.17E-02)	8.22E-01 (3.74E-02)	0.580[f]
Original First Order 10th Percentile	-8.48E+02 (9.21E+01)	-8.60E+02 (8.76E+01)	0.858[f]	Original Gray Level Size Zone Matrix Large Area Emphasis	1.131e+16 (2.13e+15 - 3.43e+16)	1.84e+16 (4.04e+09 - 3.48e+16)	0.563[m]
Original First Order 90th Percentile	-356.5 (-3.56e+15 - 3.8e+15)	-497 (-4.67e+16 - 2.56e+15)	0.005[m]	Original Gray Level Size Zone Matrix Gray Level Non Uniformity	9.515e+15 (3.49e+15 - 4.5e+16)	1.03e+16 (1.84e+08 - 6.05e+16)	0.897[m]
Original First Order Maximum	3.68E+02 (2.82E+02)	3.14E+02 (2.22E+02)	0.624[f]	Original Gray Level Size Zone Matrix Gray Level Non Uniformity Normalized	2.65E-02 (3.31E-03)	3.06E-02 (4.67E-03)	0.009[f]
Original First Order Mean	-5.985e+15 (-7.02e+15 - -3.9e+15)	-6.27e+15 (-3.96e+16 - -7010000)	0.513[m]	Original Gray Level Size Zone Matrix Size Zone Non Uniformity	1.265e+16 (3.1e+15 - 3.57e+16)	1.16e+16 (2.91e+09 - 4.02e+16)	0.844[m]
Original First Order Median	-5.98E+02 (1.32E+02)	-6.67E+02 (1.16E+02)	0.171[f]	Original Gray Level Size Zone Matrix Size Zone Non Uniformity Normalized	0.66 (0.54 - 0.83)	0.63 (0.55 - 0.77)	0.445[m]
Original First Order Interquartile Range	302 (209 - 453)	249 (167 - 479)	0.086[m]	Original Gray Level Size Zone Matrix Zone Percentage	7.48E-01 (9.30E-02)	7.23E-01 (7.25E-02)	0.392[f]
Original First Order Range	1.38E+03 (2.92E+02)	1.36E+03 (2.70E+02)	0.877[f]	Original Gray Level Size Zone Matrix Gray Level Variance	1.22e+16 (1.4e+15 - 1.68e+16)	9.74e+15 (9.51e+11 - 1.98e+16)	0.141[m]
Original First Order Mean Absolute Deviation	1.88e+16 (1.81e+15 - 2.56e+16)	1.49e+16 (1.28e+10 - 2.76e+16)	0.222[m]	Original Gray Level Size Zone Matrix Zone Variance	0.63 (0.11 - 1.41e+16)	0.95 (0.19 - 3.56e+16)	0.450[m]
Original First Order Robust Mean Absolute Deviation	1.295e+16 (8.68e+14 - 1.89e+16)	1.02e+16 (7.01e+14 - 2.06e+16)	0.398[m]	Original Gray Level Size Zone Matrix Zone Entropy	6.315e+15 (6.53e+13 - 6.64e+15)	6.27e+15 (6.29e+13 - 6.13e+16)	0.379[m]
Original First Order Root Mean Squared	6.705e+15 (5.33e+14 - 5.03e+16)	6.54e+15 (6.13e+14 - 8.53e+15)	0.181[m]	Original Gray Level Size Zone Matrix Low Gray Level Zone Emphasis	0.02 (0 - 0.04)	0.01 (0 - 0.07)	0.767[m]
Original First Order Standard Deviation	1.74e+16 (2.23e+14 - 2.88e+16)	1.43e+16 (1.93e+14 - 3.38e+16)	0.559[m]	Original Gray Level Size Zone Matrix High Gray Level Zone Emphasis	7.51e+15 (4.41e+14 - 3.99e+16)	6.05e+15 (4.96e+08 - 3.59e+16)	0.454[m]
Original First Order Skewness	0.56 (0.02 - 1.36e+16)	1.27e+15 (-0.13 - 1.63e+16)	0.017[m]	Original Gray Level Size Zone Matrix Small Area Low Gray Level Emphasis	0.02 (0 - 0.03)	0.01 (0 - 0.04)	0.700[m]
Original First Order Kurtosis	2.545e+16 (2.86e+15 - 3.87e+16)	6.71e+15 (2.22e+15 - 5.98e+16)	0.987[m]	Original Gray Level Size Zone Matrix Small Area High Gray Level Emphasis	8.055e+15 (5.56e+14 - 3.92e+16)	6.44e+15 (3.06e+14 - 5.05e+16)	0.856[m]
Original First Order Variance	6.42e+15 (3.95e+15 - 2.21e+16)	6.52e+15 (2.65e+12 - 5.44e+16)	0.033[m]	Original Gray Level Size Zone Matrix Large Area Low Gray Level Emphasis	0.06 (0.01 - 3.86e+15)	0.02 (0 - 4.92e+16)	0.453[m]
Original First Order Uniformity	0.03 (0.02 - 0.04)	0.03 (0.02 - 0.07)	0.029[m]	Original Gray Level Size Zone Matrix Large Area High Gray Level Emphasis	8.52E+15 (5.45E+15)	1.07E+16 (7.10E+15)	0.457[f]
Original Gray Level Co-occurrence Matrix Autocorrelation	1.2635e+16 (9.68e+14 -	1.21e+16 (8.04e+14 -	0.857[m]	Original Neighboring Gray Tone Difference Matrix Coarseness	0 (0 - 0.01)	0 (0 - 0.01)	0.821[m]

	4.32e+16)	4.6e+16)					
Original Gray Level Co-occurrence Matrix Joint Average	1.31e+16 (2.02e+15 - 2.56e+16)	1.8e+16 (1.74e+14 - 3.42e+16)	0.147[m]	Original Neighboring Gray Tone Difference Matrix Contrast	0.44 (0.24 - 0.75)	0.29 (0.15 - 0.86)	0.112[m]
Original Gray Level Co-occurrence Matrix Cluster Prominence	4.43e+15 (2.32e+15 - 3.54e+16)	1.17e+16 (3.18e+14 - 5.03e+16)	0.937[m]	Original Neighboring Gray Tone Difference Matrix Busyness	0.45 (0.08 - 1.56e+16)	0.48 (0.07 - 1.69e+16)	0.895[m]
Original Gray Level Co-occurrence Matrix Cluster Shade	7.49E+15 (2.61E+16)	1.47E+16 (1.22E+16)	0.299[g]	Original Neighboring Gray Tone Difference Matrix Complexity	9.615e+15 (9.05e+14 - 7.64e+16)	8.77e+15 (8.76e+14 - 6.99e+16)	0.481[m]
Original Gray Level Co-occurrence Matrix Cluster Tendency	3.33e+15 (2.88e+14 - 3.61e+16)	1.84e+16 (1.86e+14 - 4.63e+16)	0.210[m]	Original Neighboring Gray Tone Difference Matrix Strength	8.735e+15 (0.99 - 4.37e+16)	7.5e+15 (6.74e+13 - 2.65e+16)	0.520[m]
Original Gray Level Co-occurrence Matrix Contrast	1.275e+16 (1.67e+14 - 2.34e+16)	9.12e+15 (1.4e+12 - 2.83e+16)	0.279[m]	Original Gray Level Dependence Matrix Small Dependence Emphasis	6.77E-01 (1.02E-01)	6.50E-01 (7.65E-02)	0.442[f]
Original Gray Level Co-occurrence Matrix Correlation	3.64E-01 (1.02E-01)	3.23E-01 (9.57E-02)	0.360[f]	Original Gray Level Dependence Matrix Large Dependence Emphasis	1.107e+16 (2.8e+14 - 3.9e+16)	5.3e+15 (31000 - 3.98e+16)	0.992[m]
Original Gray Level Co-occurrence Matrix Difference Average	7.87e+15 (6.86e+14 - 1.2e+16)	8.07e+15 (9.58e+14 - 7.82e+16)	0.204[m]	Original Gray Level Dependence Matrix Gray Level Non Uniformity	8.8e+15 (7.37e+14 - 5.82e+16)	7.47e+15 (41900 - 6.22e+16)	0.807[m]
Original Gray Level Co-occurrence Matrix Difference Entropy	4.635e+15 (4.72e+14 - 4.45e+16)	4.45e+15 (4.15e+14 - 5.03e+16)	0.348[m]	Original Gray Level Dependence Matrix Dependence Non Uniformity	7.41e+15 (1.67e+15 - 2.71e+16)	8.13e+15 (5760000 - 5.1e+16)	0.532[m]
Original Gray Level Co-occurrence Matrix Difference Variance	7.035e+15 (3.8e+15 - 4.71e+16)	5.93e+15 (4e+14 - 5.25e+16)	0.776[m]	Original Gray Level Dependence Matrix Dependence Non Uniformity Normalized	0.46 (0.29 - 0.71)	0.4 (0.29 - 0.62)	0.284[m]
Original Gray Level Co-occurrence Matrix Joint Energy	0 (0 - 0)	0 (0 - 0.01)	0.246[m]	Original Gray Level Dependence Matrix Gray Level Variance	1.071e+16 (1.39e+14 - 1.68e+16)	1e+16 (8.59e+14 - 5.65e+16)	0.380[m]
Original Gray Level Co-occurrence Matrix Joint Entropy	9.755e+15 (7.94e+15 - 1.05e+16)	9.29e+15 (9.17e+13 - 7.76e+16)	0.809[m]	Original Gray Level Dependence Matrix Dependence Variance	0.71 (0.17 - 1.84e+16)	0.85 (0.28 - 1.52e+16)	0.528[m]
Original Gray Level Co-occurrence Matrix Informal Measure of Correlation 1	-0.14 (-0.53 - -0.05)	-0.13 (-0.51 - -0.04)	0.546[m]	Original Gray Level Dependence Matrix Dependence Entropy	6.75e+15 (6.12e+15 - 6.45e+16)	6.53e+15 (6.2e+14 - 6.51e+16)	0.566[m]
Original Gray Level Co-occurrence Matrix Informal Measure of Correlation 2	0.89 (0.61 - 1)	0.86 (0.55 - 1)	0.678[m]	Original Gray Level Dependence Matrix Low Gray Level Emphasis	0.02 (0 - 0.08)	0.01 (0 - 0.25)	0.863[m]
Original Gray Level Co-occurrence Matrix Inverse Difference Moment	1.21E-01 (2.80E-02)	1.37E-01 (2.86E-02)	0.128[f]	Original Gray Level Dependence Matrix High Gray Level Emphasis	9.215e+15 (5.44e+15 - 3.71e+16)	5.31e+15 (5210000 - 4.46e+16)	0.073[m]
Original Gray Level Co-occurrence Matrix Maximal Correlation Coefficient	5.63E-01 (1.42E-01)	5.65E-01 (1.27E-01)	0.897[f]	Original Gray Level Dependence Matrix Small Dependence Low Gray Level Emphasis	0.01 (0 - 0.02)	0.01 (0 - 0.04)	0.764[m]
Original Gray Level Co-occurrence Matrix Inverse Difference Moment Normalized	0.97 (0.95 - 0.98)	0.98 (0.94 - 0.98)	0.271[m]	Original Gray Level Dependence Matrix Small Dependence High Gray Level Emphasis	7.945e+15 (4.43e+15 - 4.41e+16)	6.04e+15 (2.8e+14 - 4.81e+16)	0.933[m]
Original Gray Level Co-occurrence Matrix Inverse Difference	2.04E-01 (3.20E-02)	2.22E-01 (3.14E-02)	0.123[f]	Original Gray Level Dependence Matrix Large Dependence Low Gray Level Emphasis	0.1 (0.01 - 1.42e+16)	0.02 (0 - 1.68e+16)	0.918[m]
Original Gray Level Co-occurrence Matrix Inverse Difference Normalized	0.88 (0.85 - 0.91)	0.9 (0.84 - 0.92)	0.198[m]	Original Gray Level Dependence Matrix Large Dependence High Gray Level Emphasis	9.175e+15 (1.48e+14 - 1.66e+16)	1.25e+16 (1.1e+07 - 3.87e+16)	0.209[m]
Original Gray Level Co-occurrence Matrix Inverse Variance	1.24E-01 (2.75E-02)	1.37E-01 (2.82E-02)	0.217[f]				

[m]: Mann-Whitney U Test, [f]: T-Test for Equal Variance, [g]: T-Test for Unequal Variance, *: Mean (SD) for T-Test and Median (Min-Max) for Mann-Whitney U Test

Mediasten lenf nodlarına metastaz yapan tümörler rim alanından elde olunan birinci, ikinci ve yüksek derece texture parametreleri değerlendirildiğinde; **Standart Deviation** parametresi ortalama değeri (p=0.034), **GLCM Sum Entropy** parametresi ortalama değeri (p=0.035) daha yüksek bulunmuş olup **GLDM Large Dependence High Gray Level Emphasis** parametresi ortalama değeri (p=0.040) daha düşüktür ve istatistiksel olarak anlamlı farklılık saptanmıştır (p<0.05) (Tablo 17).

Tablo 17: Mediasten lenf nodu metastazı saptanan tümörlerim rim alanı texture analiz parametreleri

Variable	Descriptive Value for 0*	Descriptive Value for 1*	Test P-value	Variable	Descriptive Value for 0	Descriptive Value for 1	Test P-value
Original Shape Mesh Volume	8.37e+15 (4.1e+15 - 3.97e+16)	6.815e+15 (4.42e+09 - 7.41e+16)	0.318[m]	Original Gray Level Co-occurrence Matrix Maximum Probability	0.01 (0 - 0.08)	0.01 (0 - 0.09)	0.480[m]
Original Shape Voxel Volume	4.32e+15 (6.26e+09 - 5.85e+16)	8.315e+15 (6.44e+08 - 3.94e+16)	0.702[m]	Original Gray Level Co-occurrence Matrix Sum Average	6.03e+15 (3.35e+15 - 4.16e+16)	4.47e+15 (3.35e+14 - 5.5e+16)	0.933[m]
Original Shape Surface Area	5.71e+15 (4.79e+14 - 1.81e+16)	9.59e+15 (1.95e+14 - 6.39e+16)	0.009[m]	Original Gray Level Co-occurrence Matrix Sum Entropy	5.73e+15 (6.15e+14 - 6.11e+15)	5.775e+15 (5.52e+13 - 6.19e+16)	0.035[m]
Original Shape Surface Area to Volume Ratio	1.09e+16 (0.81 - 3.16e+16)	1.18e+16 (0.85 - 2.35e+16)	0.906[m]	Original Gray Level Co-occurrence Matrix Sum of Squares	8.21e+15 (6.55e+14 - 1.45e+16)	1.06e+16 (9.28e+14 - 6.11e+16)	0.133[m]
Original Shape Sphericity	0.23 (0.15 - 0.43)	0.21 (0.13 - 0.44)	0.669[m]	Original Gray Level Run Length Matrix Short Run Emphasis	9.78E-01 (9.06E-03)	9.81E-01 (6.86E-03)	0.209[f]
Original Shape Compactness 1	0.01 (0 - 0.01)	0.01 (0 - 0.02)	0.682[m]	Original Gray Level Run Length Matrix Long Run Emphasis	1.09e+16 (1.09e+14 - 1.25e+16)	1.07e+16 (1.03e+15 - 1.19e+16)	0.641[m]
Original Shape Compactness 2	0.01 (0 - 0.08)	0.01 (0 - 0.08)	0.717[m]	Original Gray Level Run Length Matrix Gray Level Non Uniformity	6.92e+15 (5.24e+13 - 2.73e+16)	8.655e+15 (6.08e+14 - 4.05e+16)	0.923[m]
Original Shape Spherical Disproportion	6.29e+15 (4.15e+15 - 5.1e+16)	4.895e+15 (6.08e+12 - 5.09e+16)	0.165[m]	Original Gray Level Run Length Matrix Gray Level Non Uniformity Normalized	0.03 (0.03 - 0.04)	0.03 (0.02 - 0.06)	0.870[m]
Original Shape Maximum 3D Diameter	8.05e+15 (4.28e+15 - 5.05e+16)	7.03e+15 (8.27e+13 - 5.91e+16)	0.762[m]	Original Gray Level Run Length Matrix Run Length Non Uniformity	7.72e+15 (5.01e+14 - 5.99e+16)	5.84e+15 (8.65e+14 - 3.95e+16)	0.165[m]
Original Shape Maximum 2D Diameter Slice	4.94e+15 (1.03e+15 - 2e+16)	6.73e+15 (9.56e+13 - 5.23e+16)	0.035[m]	Original Gray Level Run Length Matrix Run Length Non Uniformity Normalized	9.45E-01 (2.16E-02)	9.52E-01 (1.69E-02)	0.203[f]
Original Shape Maximum 2D Diameter Column	7.04e+15 (4.26e+13 - 4.39e+16)	5.25e+15 (2.2e+14 - 6.1e+16)	0.821[m]	Original Gray Level Run Length Matrix Run Percentage	9.70E-01 (1.34E-02)	9.75E-01 (9.41E-03)	0.227[f]
Original Shape Maximum 2D Diameter Row	4.15e+15 (3.95e+13 - 9.6e+15)	6.45e+15 (5.41e+13 - 5.96e+16)	0.015[m]	Original Gray Level Run Length Matrix Gray Level Variance	1.02e+16 (1.11e+15 - 1.77e+16)	1.065e+16 (1.28e+15 - 6.36e+16)	0.479[m]
Original Shape Major Axis Length	5.64e+15 (4.01e+13 - 5.45e+16)	8.285e+15 (3.66e+14 - 6.19e+16)	0.288[m]	Original Gray Level Run Length Matrix Run Variance	0.03 (0.01 - 0.11)	0.02 (0.01 - 0.07)	0.162[m]
Original Shape Minor Axis Length	4.52e+15 (1.75e+15 - 5.14e+16)	7.665e+15 (6.33e+12 - 6.12e+16)	0.798[m]	Original Gray Level Run Length Matrix Run Entropy	5.24e+15 (5.18e+14 - 5.56e+15)	5.395e+15 (4.97e+14 - 5.75e+16)	0.195[m]
Original Shape Least Axis Length	1.48e+16 (2.51e+14 - 3.6e+16)	9.725e+15 (3.34e+14 - 4.03e+16)	0.822[m]	Original Gray Level Run Length Matrix Low Gray Level Run Emphasis	0.02 (0 - 0.18)	0.01 (0 - 0.22)	0.237[m]
Original Shape Elongation	7.25E-01 (1.67E-01)	6.66E-01 (1.39E-01)	0.291[f]	Original Gray Level Run Length Matrix High Gray Level Run Emphasis	5.97e+15 (3.08e+15 - 4.11e+16)	6.67e+15 (4.36e+14 - 4.8e+16)	0.680[m]
Original Shape Flatness	0.41 (0.27 - 0.79)	0.37 (0.16 - 0.65)	0.255[m]	Original Gray Level Run Length Matrix Short Run Low Gray Level Emphasis	0.01 (0 - 0.15)	0.01 (0 - 0.19)	0.245[m]
Original First Order Energy	9.65e+08 (2e+08 - 9.81e+09)	1.54e+09 (1.79e+08 - 7.89e+09)	0.674[m]	Original Gray Level Run Length Matrix Short Run High Gray Level Emphasis	5.32e+15 (1.07e+15 - 3.09e+16)	6.45e+15 (3.83e+14 - 4.74e+16)	0.511[m]
Original First Order Total Energy	8.37e+15 (1.2e+14 - 4.3e+16)	5.79e+15 (1.56e+09 - 3.63e+16)	0.391[m]	Original Gray Level Run Length Matrix Long Run Low Gray Level Emphasis	0.02 (0 - 0.38)	0.01 (0 - 0.37)	0.209[m]
Original First Order Entropy	5.11e+15 (5.52e+14 - 4.96e+16)	5.2e+15 (4.9e+14 - 5.4e+16)	0.695[m]	Original Gray Level Run Length Matrix Long Run High Gray Level Emphasis	6.33e+15 (2.58e+15 - 4.35e+16)	6.82e+15 (1.04e+15 - 4.75e+16)	0.821[m]
Original First Order Minimum	-1020 (-1180 - -951)	-1020 (-1240 - -887)	0.446[m]	Original Gray Level Size Zone Matrix Small Area Emphasis	8.15E-01 (4.47E-02)	8.29E-01 (3.87E-02)	0.194[f]
Original First Order 10th Percentile	-8.75E+02 (1.04E+02)	-8.50E+02 (8.11E+01)	0.262[f]	Original Gray Level Size Zone Matrix Large Area Emphasis	9.42e+15 (2.13e+15 - 3.48e+16)	1.8e+16 (4.04e+09 - 3.43e+16)	0.858[m]
Original First Order 90th Percentile	-466 (-4.29e+16 - - 155)	-442 (-4.67e+16 - 3.8e+15)	0.886[m]	Original Gray Level Size Zone Matrix Gray Level Non Uniformity	1.19e+16 (3.49e+15 - 4.5e+16)	8.855e+15 (1.84e+08 - 6.05e+16)	0.785[m]
Original First Order Maximum	3.28E+02 (2.37E+02)	3.25E+02 (2.37E+02)	0.995[f]	Original Gray Level Size Zone Matrix Gray Level Non Uniformity Normalized	2.96E-02 (4.07E-03)	2.97E-02 (4.98E-03)	0.971[f]
Original First Order Mean	-6.68e+15 (-7.86e+15 - - 3.9e+15)	-5.9e+15 (-3.96e+16 - - 7010000)	0.796[m]	Original Gray Level Size Zone Matrix Size Zone Non Uniformity	1.26e+16 (2.07e+15 - 3.15e+16)	1.19e+16 (2.91e+09 - 4.02e+16)	0.819[m]
Original First Order Median	-6.70E+02 (1.30E+02)	-6.44E+02 (1.20E+02)	0.385[f]	Original Gray Level Size Zone Matrix Size Zone Non Uniformity Normalized	0.6 (0.54 - 0.83)	0.64 (0.55 - 0.77)	0.314[m]
Original First Order Interquartile Range	267 (209 - 479)	263 (167 - 455)	0.916[m]	Original Gray Level Size Zone Matrix Zone Percentage	7.08E-01 (8.15E-02)	7.36E-01 (7.50E-02)	0.203[f]
Original First Order Range	1.35E+03 (2.55E+02)	1.37E+03 (2.82E+02)	0.855[f]	Original Gray Level Size Zone Matrix Gray Level Variance	1.11e+16 (7.84e+13 - 1.74e+16)	1.02e+16 (9.51e+11 - 1.98e+16)	0.951[m]
Original First Order Mean Absolute Deviation	1.52e+16 (1.57e+15 - 2.76e+16)	1.62e+16 (1.28e+10 - 2.56e+16)	0.922[m]	Original Gray Level Size Zone Matrix Zone Variance	2.17e+15 (0.11 - 1.33e+16)	0.75 (0.19 - 3.56e+16)	0.865[m]
Original First Order Robust Mean Absolute Deviation	8.91E+15 (6.19E+15)	1.07E+16 (4.98E+15)	0.511[f]	Original Gray Level Size Zone Matrix Zone Entropy	6.34e+15 (5.94e+14 - 6.13e+16)	6.205e+15 (6.29e+13 - 6.54e+15)	0.352[m]
Original First Order Root Mean Squared	7.21e+15 (7.56e+14 - 5.03e+16)	6.465e+15 (5.33e+14 - 8.53e+15)	0.143[m]	Original Gray Level Size Zone Matrix Low Gray Level Zone Emphasis	0.02 (0 - 0.05)	0.01 (0 - 0.07)	0.282[m]
Original First Order Standard Deviation	2.09e+16 (1.93e+14 - 3.38e+16)	2.97e+15 (2.23e+14 - 2.93e+16)	0.034[m]	Original Gray Level Size Zone Matrix High Gray Level Zone Emphasis	6.05e+15 (5.87e+14 - 3.59e+16)	6.24e+15 (4.96e+08 - 3.99e+16)	0.416[m]
Original First Order Skewness	1.3e+15 (0.02 - 1.4e+16)	0.9 (-0.13 - 1.63e+16)	0.611[m]	Original Gray Level Size Zone Matrix Small Area Low Gray Level Emphasis	0.01 (0 - 0.03)	0.01 (0 - 0.04)	0.365[m]
Original First Order Kurtosis	5.25e+15 (2.86e+15 - 4.78e+16)	2.4e+16 (2.22e+15 - 5.98e+16)	0.477[m]	Original Gray Level Size Zone Matrix Small Area High Gray Level Emphasis	8.56e+15 (3.24e+14 - 4.57e+16)	6.445e+15 (3.06e+14 - 5.05e+16)	0.575[m]
Original First Order Variance	6.02e+15 (3.78e+14 - 4.72e+16)	6.8e+15 (2.65e+12 - 5.44e+16)	0.767[m]	Original Gray Level Size Zone Matrix Large Area Low Gray Level Emphasis	0.04 (0.01 - 4.92e+16)	0.02 (0 - 8.79e+15)	0.153[m]
Original First Order Uniformity	0.04 (0.03 - 0.06)	0.03 (0.02 - 0.07)	0.748[m]	Original Gray Level Size Zone Matrix Large Area High Gray Level Emphasis	7.74E+15 (5.25E+15)	1.12E+16 (7.14E+15)	0.140[f]

Original Gray Level Co-occurrence Matrix Autocorrelation	1.62e+16 (9.68e+14 - 4.57e+16)	1.044e+16 (8.04e+14 - 4.6e+16)	0.929[m]	Original Neighboring Gray Tone Difference Matrix Coarseness	0 (0 - 0.01)	0 (0 - 0.01)	0.804[m]
Original Gray Level Co-occurrence Matrix Joint Average	1.47e+16 (1.35e+15 - 2.56e+16)	1.835e+16 (1.74e+14 - 3.42e+16)	0.386[m]	Original Neighboring Gray Tone Difference Matrix Contrast	0.28 (0.18 - 0.67)	0.33 (0.15 - 0.86)	0.823[m]
Original Gray Level Co-occurrence Matrix Cluster Prominence	7.39e+15 (4.08e+14 - 3.32e+16)	1.044e+16 (3.18e+14 - 5.03e+16)	0.445[m]	Original Neighboring Gray Tone Difference Matrix Busyness	0.49 (0.08 - 1.19e+16)	0.48 (0.07 - 1.69e+16)	0.602[m]
Original Gray Level Co-occurrence Matrix Cluster Shade	9.92E+15 (2.28E+16)	1.44E+16 (1.29E+16)	0.779[f]	Original Neighboring Gray Tone Difference Matrix Complexity	8.96e+15 (8.76e+14 - 7.64e+16)	8.8e+15 (9.05e+14 - 6.99e+16)	0.654[m]
Original Gray Level Co-occurrence Matrix Cluster Tendency	2.04e+16 (2.16e+15 - 4.63e+16)	1.585e+16 (1.86e+14 - 4.52e+16)	0.376[m]	Original Neighboring Gray Tone Difference Matrix Strength	3.49e+15 (0.99 - 4.37e+16)	9.485e+15 (6.74e+13 - 3.02e+16)	0.614[m]
Original Gray Level Co-occurrence Matrix Contrast	1.1e+16 (1.54e+15 - 2.19e+16)	9.55e+15 (1.4e+12 - 2.83e+16)	0.770[m]	Original Gray Level Dependence Matrix Small Dependence Emphasis	0.6 (0.51 - 0.87)	0.66 (0.52 - 0.81)	0.276[m]
Original Gray Level Co-occurrence Matrix Correlation	3.58E-01 (9.75E-02)	3.21E-01 (9.70E-02)	0.366[f]	Original Gray Level Dependence Matrix Large Dependence Emphasis	1.64e+16 (3.77e+15 - 3.98e+16)	4.965e+15 (31000 - 3.53e+16)	0.097[m]
Original Gray Level Co-occurrence Matrix Difference Average	7.95e+15 (6.86e+14 - 7.82e+16)	8.365e+15 (7.33e+14 - 6.91e+16)	0.391[m]	Original Gray Level Dependence Matrix Gray Level Non Uniformity	8.84e+15 (7.37e+14 - 5.82e+16)	8.115e+15 (41900 - 6.22e+16)	0.419[m]
Original Gray Level Co-occurrence Matrix Difference Entropy	4.38e+15 (4.72e+14 - 4.45e+16)	4.52e+15 (4.15e+14 - 5.03e+16)	0.639[m]	Original Gray Level Dependence Matrix Dependence Non Uniformity	5.95e+15 (1.75e+15 - 1.98e+16)	9.315e+15 (5760000 - 5.1e+16)	0.051[m]
Original Gray Level Co-occurrence Matrix Difference Variance	5.43e+15 (5.07e+14 - 4.83e+16)	6.685e+15 (4e+14 - 5.25e+16)	0.687[m]	Original Gray Level Dependence Matrix Dependence Non Uniformity Normalized	0.38 (0.29 - 0.71)	0.43 (0.29 - 0.62)	0.367[m]
Original Gray Level Co-occurrence Matrix Joint Energy	0 (0 - 0.01)	0 (0 - 0.01)	0.725[m]	Original Gray Level Dependence Matrix Gray Level Variance	9.07e+15 (1.39e+14 - 1.76e+16)	1.085e+16 (8.59e+14 - 5.65e+16)	0.177[m]
Original Gray Level Co-occurrence Matrix Joint Entropy	9.37e+15 (9.36e+14 - 9.89e+15)	9.38e+15 (9.17e+13 - 7.76e+16)	0.517[m]	Original Gray Level Dependence Matrix Dependence Variance	0.89 (0.17 - 1.84e+16)	0.75 (0.28 - 1.38e+16)	0.250[m]
Original Gray Level Co-occurrence Matrix Informal Measure of Correlation 1	-0.16 (-0.53 - -0.05)	-0.13 (-0.51 - -0.04)	0.898[m]	Original Gray Level Dependence Matrix Dependence Entropy	6.6e+15 (6.12e+15 - 6.96e+15)	6.55e+15 (6.2e+14 - 6.51e+16)	0.128[m]
Original Gray Level Co-occurrence Matrix Informal Measure of Correlation 2	0.89 (0.61 - 1)	0.86 (0.55 - 1)	0.739[m]	Original Gray Level Dependence Matrix Low Gray Level Emphasis	0.02 (0 - 0.22)	0.01 (0 - 0.25)	0.227[m]
Original Gray Level Co-occurrence Matrix Inverse Difference Moment	1.37E-01 (2.57E-02)	1.32E-01 (3.05E-02)	0.529[f]	Original Gray Level Dependence Matrix High Gray Level Emphasis	5.44e+15 (2.57e+15 - 3.82e+16)	6.03e+15 (5210000 - 4.46e+16)	0.996[m]
Original Gray Level Co-occurrence Matrix Maximal Correlation Coefficient	5.70E-01 (1.28E-01)	5.63E-01 (1.31E-01)	1.000[f]	Original Gray Level Dependence Matrix Small Dependence Low Gray Level Emphasis	0.01 (0 - 0.03)	0.01 (0 - 0.04)	0.386[m]
Original Gray Level Co-occurrence Matrix Inverse Difference Moment Normalized	0.98 (0.95 - 0.98)	0.97 (0.94 - 0.98)	0.634[m]	Original Gray Level Dependence Matrix Small Dependence High Gray Level Emphasis	9.35e+15 (2.95e+14 - 4.19e+16)	6.29e+15 (2.8e+14 - 4.81e+16)	0.957[m]
Original Gray Level Co-occurrence Matrix Inverse Difference	2.22E-01 (2.73E-02)	2.16E-01 (3.41E-02)	0.578[f]	Original Gray Level Dependence Matrix Large Dependence Low Gray Level Emphasis	0.05 (0.01 - 1.68e+16)	0.03 (0 - 8.44e+15)	0.054[m]
Original Gray Level Co-occurrence Matrix Inverse Difference Normalized	8.94E-01 (1.59E-02)	8.91E-01 (2.12E-02)	0.779[f]	Original Gray Level Dependence Matrix Large Dependence High Gray Level Emphasis	7.92E+15 (5.26E+15)	1.33E+16 (8.49E+15)	0.040[f]
Original Gray Level Co-occurrence Matrix Inverse Variance	1.35E-01 (2.49E-02)	1.34E-01 (2.99E-02)	0.742[f]				

[m]: Mann-Whitney U Test, [f]: T-Test for Equal Variance, *: T-Test for Unequal Variance, *: Mean (SD) for T-Test and Median (Min-Max) for Mann-Whitney U Test

4.2.3 Peritümöral Parankimden Elde Olunan Texture Parametrelerinin Değerlendirilmesi

ALK rearranjmanı olan tümörlerin peritümöral parankimden elde olunan birinci, ikinci ve üçüncü derece texture parametreleri değerlendirildiğinde;**GLCM Sum Entropy** parametresi ortalama değeri (p=0.023),GLSZM Zone Entropy parametresi ortalama değeri (p=0.019),**GLSZM Large Area Low Gray Level Emphasis** parametresi ortalama değeri (p<0.001), GLDM Gray Level Variance parametresi ortalama değeri (p=0.003) daha düşük saptanmış olup **GLRLM Run Entropy** parametresi ortalama değeri (p=0.019) daha yüksek saptanmıştır ve istatistiksel olarak anlamlıdır (p<0.05) (Tablo 18).

Tablo 18:ALK rearranjmanı olan lezyonların peritümöral texture analiz parametreleri

Variable	Descriptive Value for 0*	Descriptive Value for 1*	Test P-value	Variable	Descriptive Value for 0	Descriptive Value for 1	Test P-value
Original Shape Mesh Volume	9.665e+15 (3.65e+12 - 6.1e+16)	4.89e+15 (1.02e+14 - 3.91e+16)	0.647[m]	Original Gray Level Co-occurrence Matrix Maximum Probability	0.01 (0 - 0.08)	0.01 (0 - 0.02)	0.509[m]
Original Shape Voxel Volume	7.23e+15 (37000 - 7.14e+16)	3.66e+15 (1.01e+15 - 4.95e+16)	0.989[m]	Original Gray Level Co-occurrence Matrix Sum Average	3.615e+15 (2.96e+14 - 4.78e+16)	3.45e+15 (2.14e+15 - 4.08e+16)	0.655[m]
Original Shape Surface Area	1.0135e+16 (6.16e+14 - 2.91e+16)	6.07e+15 (2.09e+15 - 1.82e+16)	0.365[m]	Original Gray Level Co-occurrence Matrix Sum Entropy	5.3e+15 (5.47e+14 - 5.65e+16)	5.14e+15 (5.23e+14 - 5.91e+15)	0.023[m]
Original Shape Surface Area to Volume Ratio	0.51 (0.24 - 0.87)	0.62 (0.43 - 1.09e+15)	0.356[m]	Original Gray Level Co-occurrence Matrix Sum of Squares	6.82e+15 (5.73e+13 - 5.73e+16)	5.05e+15 (4.06e+15 - 4.47e+16)	0.643[m]
Original Shape Sphericity	3.51E-01 (7.96E-02)	3.29E-01 (5.47E-02)	0.393[f]	Original Gray Level Run Length Matrix Short Run Emphasis	9.56E-01 (1.48E-02)	9.62E-01 (9.41E-03)	0.257[f]
Original Shape Compactness 1	0.01 (0 - 0.02)	0.01 (0.01 - 0.02)	0.468[m]	Original Gray Level Run Length Matrix Long Run Emphasis	1.18e+16 (1.09e+15 - 1.37e+16)	1.17e+16 (1.15e+15 - 1.21e+16)	0.336[m]
Original Shape Compactness 2	0.04 (0.01 - 0.14)	0.03 (0.02 - 0.08)	0.408[m]	Original Gray Level Run Length Matrix Gray Level Non Uniformity	8.2e+15 (2.31e+14 - 4.37e+16)	1.43e+16 (1.29e+15 - 2.95e+16)	0.429[m]
Original Shape Spherical Disproportion	4.26e+15 (2.23e+14 - 3.92e+16)	3.43e+15 (2.28e+15 - 3.3e+16)	0.632[m]	Original Gray Level Run Length Matrix Gray Level Non Uniformity Normalized	5.51E-02 (1.44E-02)	5.30E-02 (1.23E-02)	0.886[f]
Original Shape Maximum 3D Diameter	8.16E+15 (3.21E+15)	6.15E+15 (2.70E+15)	0.175[f]	Original Gray Level Run Length Matrix Run Length Non Uniformity	1.335e+16 (9.67e+14 - 5.9e+16)	1.46e+16 (1.26e+15 - 3.97e+16)	0.832[m]
Original Shape Maximum 2D Diameter Slice	7.015e+15 (6.38e+14 - 5.9e+16)	6.44e+15 (4.23e+15 - 1.02e+16)	0.600[m]	Original Gray Level Run Length Matrix Run Length Non Uniformity Normalized	8.92E-01 (3.43E-02)	9.06E-01 (2.23E-02)	0.270[f]
Original Shape Maximum 2D Diameter Column	6.945e+15 (4.95e+14 - 6.15e+16)	6.8e+15 (7.56e+14 - 4.4e+16)	0.878[m]	Original Gray Level Run Length Matrix Run Percentage	9.41E-01 (2.03E-02)	9.50E-01 (1.24E-02)	0.296[f]
Original Shape Maximum 2D Diameter Row	7.355e+15 (7.93e+14 - 6.38e+16)	6.47e+15 (6.96e+14 - 1.01e+16)	0.328[m]	Original Gray Level Run Length Matrix Gray Level Variance	5.8e+15 (4.57e+14 - 6.29e+16)	5.22e+15 (1.01e+15 - 6.74e+15)	0.323[m]
Original Shape Major Axis Length	7.685e+15 (8.93e+14 - 6.16e+16)	6.99e+15 (6.89e+14 - 1.06e+16)	0.400[m]	Original Gray Level Run Length Matrix Run Variance	7.20E-02 (3.05E-02)	5.88E-02 (1.53E-02)	0.283[f]
Original Shape Minor Axis Length	6.325e+15 (3.17e+14 - 6.39e+16)	7.43e+15 (3.32e+15 - 5.42e+16)	0.341[m]	Original Gray Level Run Length Matrix Run Entropy	4.905e+15 (4.98e+13 - 5.33e+16)	4.84e+15 (4.69e+15 - 5.43e+15)	0.019[m]
Original Shape Least Axis Length	1.67e+16 (3.42e+14 - 6.11e+16)	1.47e+16 (1.86e+15 - 3.55e+16)	0.727[m]	Original Gray Level Run Length Matrix Low Gray Level Run Emphasis	0.01 (0 - 0.21)	0.01 (0.01 - 0.04)	0.290[m]
Original Shape Elongation	6.58E-01 (1.62E-01)	6.64E-01 (1.77E-01)	0.911[f]	Original Gray Level Run Length Matrix High Gray Level Run Emphasis	9.94e+15 (2.24e+14 - 4.79e+16)	1.86e+16 (1.63e+15 - 3.2e+16)	0.642[m]
Original Shape Flatness	3.74E-01 (1.17E-01)	3.00E-01 (1.20E-01)	0.087[f]	Original Gray Level Run Length Matrix Short Run Low Gray Level Emphasis	0.01 (0 - 0.17)	0.01 (0.01 - 0.04)	0.283[m]
Original First Order Energy	7.775e+09 (5.7e+08 - 4.36e+10)	2.75e+09 (1.42e+09 - 1.36e+10)	0.179[m]	Original Gray Level Run Length Matrix Short Run High Gray Level Emphasis	1.51e+16 (5.7e+14 - 4.77e+16)	1.58e+16 (2.76e+15 - 3.09e+16)	0.794[m]
Original First Order Total Energy	5.85e+15 (1.33e+14 - 5.3e+16)	5.93e+15 (1.91e+15 - 2.34e+16)	0.818[m]	Original Gray Level Run Length Matrix Long Run Low Gray Level Emphasis	0.01 (0 - 0.43)	0.01 (0.01 - 0.04)	0.335[m]
Original First Order Entropy	4.575e+15 (4.16e+14 - 4.96e+16)	4.69e+15 (4.32e+15 - 4.44e+16)	0.786[m]	Original Gray Level Run Length Matrix Long Run High Gray Level Emphasis	1.285e+16 (4.23e+14 - 4.99e+16)	5.62e+15 (1.82e+15 - 3.7e+16)	0.977[m]
Original First Order Minimum	-1020 (-1330 - -922)	-1020 (-1170 - -978)	0.615[m]	Original Gray Level Size Zone Matrix Small Area Emphasis	0.72 (0.68 - 0.84)	0.72 (0.7 - 0.81)	0.521[m]
Original First Order 10th Percentile	-903 (-8.92e+15 - -755)	-876 (-8.93e+15 - -801)	0.451[m]	Original Gray Level Size Zone Matrix Large Area Emphasis	1.235e+16 (1.61e+14 - 5.59e+16)	1.39e+16 (2.56e+15 - 3.48e+16)	0.763[m]
Original First Order 90th Percentile	-517.5 (-4.36e+16 - -143)	-519 (-594 - -165)	0.598[m]	Original Gray Level Size Zone Matrix Gray Level Non Uniformity	1.24e+16 (4.06e+14 - 4.9e+16)	8.68e+15 (9.2e+14 - 3.36e+16)	0.536[m]
Original First Order Maximum	4.98E+02 (3.31E+02)	4.73E+02 (3.47E+02)	0.934[f]	Original Gray Level Size Zone Matrix Gray Level Non Uniformity Normalized	3.98E-02 (6.24E-03)	4.02E-02 (5.72E-03)	0.625[f]
Original First Order Mean	-7.275e+15 (-8.47e+15 - -6.63e+14)	-7.23e+15 (-7.7e+15 - -5.16e+13)	0.378[m]	Original Gray Level Size Zone Matrix Size Zone Non Uniformity	1e+16 (2.53e+13 - 7.24e+16)	5.92e+15 (1.12e+15 - 3.35e+16)	0.270[m]
Original First Order Median	-7.62E+02 (7.59E+01)	-7.33E+02 (8.56E+01)	0.540[f]	Original Gray Level Size Zone Matrix Size Zone Non Uniformity Normalized	0.48 (0.43 - 0.66)	0.48 (0.46 - 0.61)	0.541[m]
Original First Order Interquartile Range	175 (93 - 333)	146 (126 - 318)	0.889[m]	Original Gray Level Size Zone Matrix Zone Percentage	4.84E-01 (1.20E-01)	5.21E-01 (9.46E-02)	0.342[f]
Original First Order Range	1.55E+03 (3.72E+02)	1.51E+03 (3.75E+02)	0.813[f]	Original Gray Level Size Zone Matrix Gray Level Variance	6.94e+15 (1.05e+14 - 5.69e+16)	7.53e+15 (6.28e+15 - 1.12e+16)	0.890[m]
Original First Order Mean Absolute Deviation	1.105e+16 (1.21e+15 - 2.09e+16)	1.2e+16 (8.82e+15 - 1.98e+16)	0.305[m]	Original Gray Level Size Zone Matrix Zone Variance	6.9e+15 (0.5 - 5.93e+16)	1.02e+16 (1.08e+15 - 2.98e+16)	0.904[m]
Original First Order Robust Mean Absolute Deviation	7.97e+15 (7.17e+14 - 6.23e+16)	9e+15 (5.97e+15 - 6.1e+16)	0.289[m]	Original Gray Level Size Zone Matrix Zone Entropy	6.59e+15 (6.73e+13 - 6.7e+16)	6.44e+15 (6.47e+14 - 6.64e+15)	0.019[m]
Original First Order Root Mean Squared	7.32e+15 (6.66e+14 - 8.59e+15)	7.47e+15 (5.75e+15 - 7.85e+15)	0.457[m]	Original Gray Level Size Zone Matrix Low Gray Level Zone Emphasis	0.01 (0 - 0.09)	0.01 (0.01 - 0.04)	0.143[m]
Original First Order Standard Deviation	1.56e+16 (1.48e+14 - 2.59e+16)	1.87e+16 (1.19e+16 - 2.53e+16)	0.193[m]	Original Gray Level Size Zone Matrix High Gray Level Zone Emphasis	1.216e+16 (3.49e+14 - 4.82e+16)	2.53e+16 (3.38e+15 - 4.3e+16)	0.272[m]
Original First Order Skewness	7.28e+15 (0.5 - 3.46e+16)	2.95e+15 (0.83 - 2.51e+16)	0.723[m]	Original Gray Level Size Zone Matrix Small Area Low Gray Level Emphasis	0.01 (0 - 0.06)	0.01 (0 - 0.03)	0.386[m]
Original First Order Kurtosis	8.265e+15 (1.6e+15 - 3.83e+16)	1.02e+16 (8.46e+14 - 4.63e+16)	0.362[m]	Original Gray Level Size Zone Matrix Small Area High Gray Level Emphasis	1.79e+16 (2e+15 - 5.08e+16)	3.21e+15 (3.22e+13 - 2.03e+16)	0.053[m]
Original First Order Variance	5.335e+15 (2.3e+14 - 3.8e+16)	4.57e+15 (2.36e+15 - 1.58e+16)	0.380[m]	Original Gray Level Size Zone Matrix Large Area Low Gray Level Emphasis	0.31 (0.01 - 2.39e+16)	0.14 (0.03 - 0.62)	<0.001[m]
Original First Order Uniformity	5.71E-02 (1.58E-02)	5.43E-02 (1.30E-02)	0.838[f]	Original Gray Level Size Zone Matrix Large Area High Gray Level Emphasis	1.021e+16 (1.18e+15 - 5.38e+16)	1.42e+16 (1.37e+15 - 3.47e+16)	0.752[m]
Original Gray Level Co-occurrence Matrix Autocorrelation	9.69e+15 (7.33e+14 -	1.28e+16 (2.85e+15 -	0.700[m]	Original Neighboring Gray Tone Difference Matrix Coarseness	0 (0 - 9.8e+10)	0 (0 - 0)	0.546[m]

	4.49e+16)	2.04e+16)					
Original Gray Level Co-occurrence Matrix Joint Average	1.35e+16 (2.01e+14 - 7.18e+16)	1.15e+16 (1.73e+15 - 1.62e+16)	0.340[m]	Original Neighboring Gray Tone Difference Matrix Contrast	0.12 (0.04 - 0.34)	0.1 (0.09 - 0.31)	0.922[m]
Original Gray Level Co-occurrence Matrix Cluster Prominence	1.295e+16 (1.54e+13 - 4.57e+16)	3.63e+15 (1.03e+15 - 3.59e+16)	0.279[m]	Original Neighboring Gray Tone Difference Matrix Busyness	6.295e+15 (0.18 - 6.02e+16)	0.71 (0.52 - 1.53e+16)	0.190[m]
Original Gray Level Co-occurrence Matrix Cluster Shade	6.205e+15 (8.22e+13 - 4.03e+16)	5.73e+15 (2.07e+15 - 2.79e+16)	0.926[m]	Original Neighboring Gray Tone Difference Matrix Complexity	7.24e+15 (7.11e+13 - 7.03e+16)	7.6e+15 (6.43e+15 - 5.92e+16)	0.264[m]
Original Gray Level Co-occurrence Matrix Cluster Tendency	1.13e+16 (6.46e+14 - 5.18e+16)	1.25e+16 (1.73e+14 - 2.57e+16)	0.684[m]	Original Neighboring Gray Tone Difference Matrix Strength	4.61e+15 (0.39 - 3.88e+16)	5.14e+15 (0.84 - 2.58e+16)	0.766[m]
Original Gray Level Co-occurrence Matrix Contrast	6.49e+15 (2.43e+15 - 6.31e+16)	5.47e+15 (5.18e+14 - 5.81e+16)	0.536[m]	Original Gray Level Dependence Matrix Small Dependence Emphasis	0.42 (0.28 - 0.7)	0.43 (0.39 - 0.63)	0.451[m]
Original Gray Level Co-occurrence Matrix Correlation	3.79E-01 (1.08E-01)	3.95E-01 (5.39E-02)	0.813[a]	Original Gray Level Dependence Matrix Large Dependence Emphasis	8.63e+15 (9.45e+13 - 6.11e+16)	8.12e+15 (6.3e+15 - 3.65e+16)	0.926[m]
Original Gray Level Co-occurrence Matrix Difference Average	5.775e+15 (4.94e+14 - 7.08e+16)	5.08e+15 (8.02e+14 - 5.38e+16)	0.636[m]	Original Gray Level Dependence Matrix Gray Level Non Uniformity	6.5e+15 (2.98e+14 - 5.63e+16)	1.12e+16 (1.89e+15 - 2.67e+16)	0.997[m]
Original Gray Level Co-occurrence Matrix Difference Entropy	4.29e+15 (3.62e+13 - 4.58e+16)	4.43e+15 (3.8e+15 - 3.9e+16)	0.824[m]	Original Gray Level Dependence Matrix Dependence Non Uniformity	7.12e+15 (4.46e+14 - 4.49e+16)	1e+16 (1.05e+15 - 3.65e+16)	0.841[m]
Original Gray Level Co-occurrence Matrix Difference Variance	5.445e+15 (2.19e+14 - 5.65e+16)	2.7e+16 (4.35e+15 - 3.78e+16)	0.102[m]	Original Gray Level Dependence Matrix Dependence Non Uniformity Normalized	0.23 (0.16 - 0.47)	0.25 (0.22 - 0.4)	0.555[m]
Original Gray Level Co-occurrence Matrix Joint Energy	0 (0 - 0.01)	0 (0 - 0.01)	0.560[m]	Original Gray Level Dependence Matrix Gray Level Variance	7.105e+15 (4.53e+14 - 6.3e+16)	5.13e+15 (6.53e+14 - 1e+16)	0.003[m]
Original Gray Level Co-occurrence Matrix Joint Entropy	8.67e+15 (8.11e+14 - 7.79e+16)	8.6e+15 (8.24e+15 - 9.88e+15)	0.830[m]	Original Gray Level Dependence Matrix Dependence Variance	1.08e+16 (0.6 - 4.27e+16)	1.91e+16 (0.82 - 2.45e+16)	0.922[m]
Original Gray Level Co-occurrence Matrix Informal Measure of Correlation 1	-0.06 (-0.21 - -0.02)	-0.08 (-0.1 - -0.03)	0.673[m]	Original Gray Level Dependence Matrix Dependence Entropy	6.79e+15 (6.45e+14 - 7.25e+16)	6.62e+15 (6.46e+14 - 6.62e+16)	0.667[m]
Original Gray Level Co-occurrence Matrix Informal Measure of Correlation 2	0.61 (0.41 - 0.93)	0.72 (0.47 - 0.8)	0.377[m]	Original Gray Level Dependence Matrix Low Gray Level Emphasis	0.01 (0 - 0.24)	0.01 (0.01 - 0.04)	0.303[m]
Original Gray Level Co-occurrence Matrix Inverse Difference Moment	0.2 (0.12 - 0.29)	0.2 (0.12 - 0.22)	0.785[m]	Original Gray Level Dependence Matrix High Gray Level Emphasis	1.21e+16 (3.27e+14 - 4.81e+16)	1.59e+16 (2.48e+14 - 3.15e+16)	0.843[m]
Original Gray Level Co-occurrence Matrix Maximal Correlation Coefficient	5.10E-01 (9.11E-02)	5.03E-01 (7.04E-02)	0.862[f]	Original Gray Level Dependence Matrix Small Dependence Low Gray Level Emphasis	0.01 (0 - 0.03)	0.01 (0 - 0.02)	0.241[m]
Original Gray Level Co-occurrence Matrix Inverse Difference Moment Normalized	0.99 (0.97 - 0.99)	0.99 (0.98 - 0.99)	0.787[m]	Original Gray Level Dependence Matrix Small Dependence High Gray Level Emphasis	1.105e+16 (2.15e+14 - 6.29e+16)	9.17e+15 (1.63e+14 - 1.75e+16)	0.290[m]
Original Gray Level Co-occurrence Matrix Inverse Difference	0.29 (0.21 - 0.38)	0.29 (0.21 - 0.31)	0.837[m]	Original Gray Level Dependence Matrix Large Dependence Low Gray Level Emphasis	0.09 (0.01 - 2.31e+16)	0.06 (0.04 - 0.26)	0.446[m]
Original Gray Level Co-occurrence Matrix Inverse Difference Normalized	0.93 (0.89 - 0.95)	0.93 (0.9 - 0.93)	0.915[m]	Original Gray Level Dependence Matrix Large Dependence High Gray Level Emphasis	1.125e+16 (2.31e+14 - 5.03e+16)	1.1e+16 (2.19e+15 - 2.06e+16)	0.605[m]
Original Gray Level Co-occurrence Matrix Inverse Variance	0.21 (0.12 - 0.3)	0.21 (0.13 - 0.22)	0.979[m]				

[m]: Mann-Whitney U Test, [t]: T-Test for Equal Variance, [a]: T-Test for Unequal Variance, *: Mean (SD) for T-Test and Median (Min-Max) for Mann-Whitney U Test

EGFR mutasyonu olan tümörlerin peritümöral parankimden elde olununa birinci, ikinci ve üçüncü derece texture parametreleri değerlendirildiğinde;**Energy** parametresi ortalama değeri (p=0.001), **Maximum** parametresi ortalama değeri (p=0.017),**Range** parametresi ortalama değeri (p=0.042), **Standart Deviation** parametresi ortalama değeri (p=0.30),**GLCM Correlation** parametresi ortalama değeri (p=0.004),**GLCM Inverse Difference Moment** parametresi ortalama değeri (p=0.034), **GLCM Inverse Difference** parametresi ortalama değeri (p=0.041),**GLRLM Run Variance** parametresi ortalama değeri (p=0.005), **GLRLM Low Gray Level Run Emphasis** parametresi ortalama değeri (p=0.001), **GLRLM Short Run Low Gray Level Emphasis** parametresi ortalama değeri (p<0.001), **GLRLM Long Run Low Gray Level Emphasis** parametresi ortalama değeri (p=0.006), **GLSZM Low Gray Level Zone Emphasis** parametresi ortalama değeri (p<0.001), **GLSZM Small Area Low Gray Level Emphasis** parametresi ortalama değeri (p<0.001), **GLDM Low Gray Level Emphasis** parametresi ortalama değeri

(p=0.002), **GLDM Small Dependence Low Gray Level Emphasis** parametresi ortalama değeri (p<0.001) daha düşük saptanmış olup **Entropy** parametresi ortalama değeri (p=0.030),**Median** parametresi ortalama değeri (p=0.034), **GLRLM Short Run Emphasis** parametresi ortalama değeri (p=0.007), **GLRLM Run Length Non Uniformity Normalized** parametresi ortalama değeri (p=0.007), **GLRLM Run Percentage** parametresi ortalama değeri (0.007),**GLSZM Small Area Emphasis** parametresi ortalama değeri (p=0.026),**GLSZM Size Zone Non Uniformity Normalized** parametresi ortalama değeri (p=0.028), **GLSZM Zone Matrix** parametresi ortalama değeri (p=0.007), **GLSZM Large Area Low Gray Level Emphasis** parametresi ortalama değeri (p=0.035),**GLDM Small Dependence Emphasis** parametresi ortalama değeri (p=0.009),**GLDM Dependence Non Uniformity Normalized** parametresi ortalama değeri (p=0.015) daha yüksek saptanmış olup istatistiksel olarak anlamlı farklılık saptanmıştır (p<0.005)(Tablo 19).

Tablo 19:EGFR mutasyonu olan tümörlerin peritümöral texture analiz parametreleri

Variable	Descriptive Value for 0*	Descriptive Value for 1*	Test P-value	Variable	Descriptive Value for 0	Descriptive Value for 1	Test P-value
Original Shape Mesh Volume	7.7e+15 (3.65e+12 - 6.1e+16)	1.46e+16 (2.27e+15 - 5.11e+16)	0.650[m]	Original Gray Level Co-occurrence Matrix Maximum Probability	0.01 (0 - 0.08)	0.01 (0 - 0.03)	0.182[m]
Original Shape Voxel Volume	5.52e+15 (37000 - 7.14e+16)	1.5e+16 (3.05e+12 - 5.19e+16)	0.764[m]	Original Gray Level Co-occurrence Matrix Sum Average	3.26e+15 (2.96e+14 - 4.08e+16)	4.1e+15 (2.56e+15 - 4.78e+16)	0.172[m]
Original Shape Surface Area	9.595e+15 (6.16e+14 - 2.74e+16)	9.31e+15 (9.25e+14 - 2.91e+16)	0.479[m]	Original Gray Level Co-occurrence Matrix Sum Entropy	5.245e+15 (5.23e+14 - 5.38e+16)	5.45e+15 (5.49e+14 - 5.65e+16)	0.645[m]
Original Shape Surface Area to Volume Ratio	0.49 (0.24 - 1.09e+15)	0.63 (0.42 - 0.86)	0.530[m]	Original Gray Level Co-occurrence Matrix Sum of Squares	5.75e+15 (5.73e+13 - 5.73e+16)	7.53e+15 (4.99e+14 - 5.64e+16)	0.329[m]
Original Shape Sphericity	3.54E-01 (7.55E-02)	3.30E-01 (7.80E-02)	0.314[f]	Original Gray Level Run Length Matrix Short Run Emphasis	9.53E-01 (1.25E-02)	9.66E-01 (1.45E-02)	0.007[f]
Original Shape Compactness 1	1.14E-02 (3.66E-03)	1.03E-02 (3.73E-03)	0.314[f]	Original Gray Level Run Length Matrix Long Run Emphasis	1.19e+16 (1.1e+15 - 1.37e+16)	1.11e+16 (1.09e+15 - 1.32e+16)	0.339[m]
Original Shape Compactness 2	0.04 (0.01 - 0.14)	0.03 (0.01 - 0.14)	0.442[m]	Original Gray Level Run Length Matrix Gray Level Non Uniformity	9.55e+15 (2.31e+14 - 4.37e+16)	8.73e+15 (4.44e+15 - 3.12e+16)	0.783[m]
Original Shape Spherical Disproportion	3.4e+15 (2.23e+14 - 3.83e+16)	1.95e+16 (2.57e+14 - 3.92e+16)	0.250[m]	Original Gray Level Run Length Matrix Gray Level Non Uniformity Normalized	0.06 (0.03 - 0.08)	0.04 (0.03 - 0.09)	0.139[m]
Original Shape Maximum 3D Diameter	8.15E+15 (3.34E+15)	7.12E+15 (2.79E+15)	0.468[f]	Original Gray Level Run Length Matrix Run Length Non Uniformity	1.825e+16 (9.67e+14 - 5.34e+16)	1.11e+16 (1.38e+15 - 5.9e+16)	0.305[m]
Original Shape Maximum 2D Diameter Slice	6.665e+15 (6.92e+14 - 5.9e+16)	7.17e+15 (6.38e+14 - 8.2e+15)	0.264[m]	Original Gray Level Run Length Matrix Run Length Non Uniformity Normalized	8.86E-01 (2.86E-02)	9.15E-01 (3.42E-02)	0.007[f]
Original Shape Maximum 2D Diameter Column	6.995e+15 (7.56e+14 - 5.65e+16)	6.6e+15 (4.95e+14 - 6.15e+16)	0.605[m]	Original Gray Level Run Length Matrix Run Percentage	9.37E-01 (1.71E-02)	9.55E-01 (1.96E-02)	0.007[f]
Original Shape Maximum 2D Diameter Row	6.9e+15 (6.96e+14 - 6.35e+16)	7.38e+15 (4.39e+15 - 6.38e+16)	0.212[m]	Original Gray Level Run Length Matrix Gray Level Variance	5.08e+15 (4.57e+14 - 4.66e+16)	6.42e+15 (7.66e+14 - 6.29e+16)	0.230[m]
Original Shape Major Axis Length	7.455e+15 (6.89e+14 - 6.16e+16)	7.66e+15 (8.93e+14 - 5.7e+16)	0.795[m]	Original Gray Level Run Length Matrix Run Variance	7.71E-02 (2.72E-02)	5.23E-02 (2.61E-02)	0.005[f]
Original Shape Minor Axis Length	6.935e+15 (2.55e+15 - 6.39e+16)	5.11e+15 (3.17e+14 - 4.68e+16)	0.316[m]	Original Gray Level Run Length Matrix Run Entropy	4.805e+15 (4.98e+13 - 4.93e+16)	5.09e+15 (5.07e+14 - 5.33e+16)	0.312[m]
Original Shape Least Axis Length	1.48e+16 (3.42e+14 - 4.97e+16)	2.35e+16 (1.06e+15 - 6.11e+16)	0.220[m]	Original Gray Level Run Length Matrix Low Gray Level Run Emphasis	0.02 (0 - 0.21)	0.01 (0 - 0.02)	0.001[m]
Original Shape Elongation	6.63E-01 (1.58E-01)	6.49E-01 (1.80E-01)	0.991[f]	Original Gray Level Run Length Matrix High Gray Level Run Emphasis	1.12e+16 (2.24e+14 - 3.36e+16)	5.76e+15 (3.54e+14 - 4.79e+16)	0.469[m]
Original Shape Flatness	3.46E-01 (1.24E-01)	4.02E-01 (1.00E-01)	0.157[f]	Original Gray Level Run Length Matrix Short Run Low Gray Level Emphasis	0.02 (0 - 0.17)	0.01 (0 - 0.02)	<0.001[m]
Original First Order Energy	9.14e+09 (1.42e+09 - 4.36e+10)	3.19e+09 (5.7e+08 - 1.41e+10)	0.001[m]	Original Gray Level Run Length Matrix Short Run High Gray Level Emphasis	1.51e+16 (9.46e+14 - 3.22e+16)	1.87e+16 (5.7e+14 - 4.77e+16)	0.346[m]
Original First Order Total Energy	5.63e+15 (1.33e+14 -	6.4e+15 (1.5e+15 -	0.888[m]	Original Gray Level Run Length Matrix Long Run Low Gray Level Emphasis	0.02 (0.01 - 0.43)	0.01 (0 - 0.03)	0.006[m]

	5.3e+16)	3.37e+16)					
Original First Order Entropy	4.495e+15 (4.16e+14 - 4.96e+16)	4.78e+15 (3.94e+15 - 5.21e+15)	0.030[m]	Original Gray Level Run Length Matrix Long Run High Gray Level Emphasis	1.445e+16 (1.66e+15 - 4.99e+16)	6.06e+15 (4.23e+14 - 3.91e+16)	0.722[m]
Original First Order Minimum	-1020 (-1240 - -978)	-1020 (-1330 - -922)	0.575[m]	Original Gray Level Size Zone Matrix Small Area Emphasis	0.72 (0.68 - 0.81)	0.74 (0.7 - 0.84)	0.026[m]
Original First Order 10th Percentile	-907 (-8.93e+15 - - 761)	-859 (-8.92e+15 - - 755)	0.512[m]	Original Gray Level Size Zone Matrix Large Area Emphasis	1.235e+16 (1.61e+14 - 5.59e+16)	1.49e+16 (4.02e+15 - 4.77e+16)	0.381[m]
Original First Order 90th Percentile	-531.5 (-6.91e+15 - - 143)	-502 (-4.36e+16 - - 292)	0.391[m]	Original Gray Level Size Zone Matrix Gray Level Non Uniformity	1.005e+16 (8.48e+14 - 4.9e+16)	1.41e+16 (4.06e+14 - 3.6e+16)	0.749[m]
Original First Order Maximum	5.68E+02 (3.08E+02)	3.13E+02 (3.19E+02)	0.017[f]	Original Gray Level Size Zone Matrix Gray Level Non Uniformity Normalized	0.04 (0.03 - 0.05)	0.04 (0.03 - 0.05)	0.566[m]
Original First Order Mean	-7.38e+15 (-8.47e+15 - - 5.16e+13)	-6.84e+15 (-7.85e+15 - - 6.63e+14)	0.514[m]	Original Gray Level Size Zone Matrix Size Zone Non Uniformity	9.61e+15 (7.59e+14 - 7.24e+16)	1.57e+16 (2.53e+13 - 5.15e+16)	0.784[m]
Original First Order Median	-7.70E+02 (8.25E+01)	-7.27E+02 (5.32E+01)	0.034[f]	Original Gray Level Size Zone Matrix Size Zone Non Uniformity Normalized	0.47 (0.43 - 0.61)	0.5 (0.45 - 0.66)	0.028[m]
Original First Order Interquartile Range	1.82E+02 (5.73E+01)	1.68E+02 (4.20E+01)	0.455[f]	Original Gray Level Size Zone Matrix Zone Percentage	4.58E-01 (9.56E-02)	5.67E-01 (1.31E-01)	0.007[f]
Original First Order Range	1.61E+03 (3.21E+02)	1.38E+03 (4.36E+02)	0.042[f]	Original Gray Level Size Zone Matrix Gray Level Variance	6.975e+15 (1.05e+14 - 1.33e+16)	7.24e+15 (7.14e+14 - 5.69e+16)	0.296[m]
Original First Order Mean Absolute Deviation	1.15e+16 (1.21e+15 - 2.09e+16)	1.09e+16 (8.07e+15 - 1.95e+16)	0.576[m]	Original Gray Level Size Zone Matrix Zone Variance	8.1e+15 (3.57e+13 - 5.93e+16)	6.89e+15 (0.5 - 3.92e+16)	0.687[m]
Original First Order Root Mean Squared	7.55e+15 (8.5e+14 - 8.59e+15)	6.91e+15 (6.66e+14 - 7.94e+15)	0.106[m]	Original Gray Level Size Zone Matrix Low Gray Level Zone Emphasis	0.02 (0 - 0.09)	0.01 (0 - 0.03)	<0.001[m]
Original First Order Standard Deviation	1.845e+16 (1.48e+14 - 2.59e+16)	1.44e+16 (1.35e+15 - 1.66e+16)	0.030[m]	Original Gray Level Size Zone Matrix High Gray Level Zone Emphasis	2e+16 (3.49e+14 - 4.6e+16)	7.02e+15 (3.25e+15 - 4.82e+16)	0.850[m]
Original First Order Skewness	6.975e+15 (0.83 - 3.46e+16)	2.55e+15 (0.5 - 2.17e+16)	0.180[m]	Original Gray Level Size Zone Matrix Small Area Low Gray Level Emphasis	0.02 (0 - 0.06)	0 (0 - 0.02)	<0.001[m]
Original First Order Kurtosis	8.595e+15 (8.46e+14 - 4.63e+16)	6.58e+15 (5.18e+15 - 3.83e+16)	0.384[m]	Original Gray Level Size Zone Matrix Small Area High Gray Level Emphasis	1.75e+16 (3.22e+13 - 5.08e+16)	5.29e+15 (2e+15 - 3.48e+16)	0.456[m]
Original First Order Variance	4.655e+15 (6.69e+14 - 3.8e+16)	1.28e+16 (2.3e+14 - 2.77e+16)	0.614[m]	Original Gray Level Size Zone Matrix Large Area Low Gray Level Emphasis	0.55 (0.03 - 2.39e+16)	0.06 (0.01 - 1.66e+16)	0.035[m]
Original First Order Uniformity	0.06 (0.03 - 0.08)	0.04 (0.03 - 0.09)	0.115[m]	Original Gray Level Size Zone Matrix Large Area High Gray Level Emphasis	1.305e+16 (1.37e+15 - 5.38e+16)	3.97e+15 (1.18e+15 - 3.8e+16)	0.095[m]
Original Gray Level Co-occurrence Matrix Autocorrelation	1.086e+16 (7.33e+14 - 4.49e+16)	4.37e+15 (2.73e+15 - 3.9e+16)	0.809[m]	Original Neighboring Gray Tone Difference Matrix Coarseness	0 (0 - 9.8e+10)	0 (0 - 0)	0.368[m]
Original Gray Level Co-occurrence Matrix Joint Average	1.185e+16 (2.01e+14 - 7.18e+16)	1.65e+16 (1.96e+15 - 2.39e+16)	0.270[m]	Original Neighboring Gray Tone Difference Matrix Contrast	0.11 (0.06 - 0.34)	0.14 (0.04 - 0.32)	0.301[m]
Original Gray Level Co-occurrence Matrix Cluster Prominence	1.25e+16 (5.82e+14 - 4.43e+16)	8.91e+15 (1.54e+13 - 4.57e+16)	0.552[m]	Original Neighboring Gray Tone Difference Matrix Busyness	5.545e+15 (0.52 - 6.02e+16)	1 (0.18 - 2.07e+16)	0.507[m]
Original Gray Level Co-occurrence Matrix Cluster Shade	5.48e+15 (8.22e+13 - 4.03e+16)	1.12e+16 (1.62e+15 - 3.26e+16)	0.740[m]	Original Neighboring Gray Tone Difference Matrix Complexity	7.24e+15 (1.1e+14 - 7.03e+16)	7.92e+15 (7.11e+13 - 4.04e+16)	0.978[m]
Original Gray Level Co-occurrence Matrix Cluster Tendency	1.13e+16 (1.73e+14 - 3.12e+16)	1.4e+16 (6.46e+14 - 5.18e+16)	0.592[m]	Original Neighboring Gray Tone Difference Matrix Strength	2.8e+15 (0.39 - 3.88e+16)	8.07e+15 (0.76 - 2.46e+16)	0.390[m]
Original Gray Level Co-occurrence Matrix Contrast	6.11e+15 (5.18e+14 - 5.82e+16)	8.09e+15 (2.43e+15 - 6.31e+16)	0.976[m]	Original Gray Level Dependence Matrix Small Dependence Emphasis	4.07E-01 (7.95E-02)	5.01E-01 (1.15E-01)	0.009[s]
Original Gray Level Co-occurrence Matrix Correlation	4.11E-01 (8.63E-02)	3.10E-01 (1.03E-01)	0.004[f]	Original Gray Level Dependence Matrix Large Dependence Emphasis	8.08e+15 (9.45e+13 - 3.65e+16)	9.4e+15 (4.02e+15 - 6.11e+16)	0.091[m]
Original Gray Level Co-occurrence Matrix Difference Average	5.62e+15 (4.94e+14 - 7.08e+16)	6.68e+15 (6.52e+14 - 5.85e+16)	0.522[m]	Original Gray Level Dependence Matrix Gray Level Non Uniformity	7.075e+15 (2.98e+14 - 2.78e+16)	6.76e+15 (1.02e+15 - 5.63e+16)	0.431[m]
Original Gray Level Co-occurrence Matrix Difference Entropy	4.37e+15 (3.99e+14 - 4.58e+16)	4.27e+15 (3.62e+13 - 4.08e+16)	0.108[m]	Original Gray Level Dependence Matrix Dependence Non Uniformity	9.515e+15 (4.46e+14 - 3.7e+16)	3.87e+15 (1.49e+15 - 4.49e+16)	0.504[m]
Original Gray Level Co-occurrence Matrix Difference Variance	2.07e+16 (2.29e+14 - 4.84e+16)	1.87e+16 (2.19e+14 - 5.65e+16)	0.628[m]	Original Gray Level Dependence Matrix Dependence Non Uniformity Normalized	0.22 (0.16 - 0.4)	0.28 (0.16 - 0.47)	0.015[m]
Original Gray Level Co-occurrence Matrix Joint Energy	0 (0 - 0.01)	0 (0 - 0.01)	0.196[m]	Original Gray Level Dependence Matrix Gray Level Variance	5.62e+15 (4.53e+14 - 5.13e+16)	8.93e+15 (4.28e+15 - 6.3e+16)	0.126[m]
Original Gray Level Co-occurrence Matrix Joint Entropy	8.59e+15 (8.11e+14 - 7.79e+16)	8.91e+15 (9.03e+14 - 9.78e+15)	0.433[m]	Original Gray Level Dependence Matrix Dependence Variance	1.65e+16 (0.82 - 4.27e+16)	2.54e+15 (0.6 - 2.82e+16)	0.070[m]
Original Gray Level Co-occurrence Matrix Informal Measure of Correlation 1	-0.06 (-0.1 - -0.02)	-0.06 (-0.21 - -0.03)	0.129[m]	Original Gray Level Dependence Matrix Dependence Entropy	6.81e+15 (6.45e+14 - 7.25e+16)	6.52e+15 (6.41e+15 - 6.5e+16)	0.199[m]
Original Gray Level Co-occurrence Matrix Informal Measure of Correlation 2	6.06E-01 (9.10E-02)	6.76E-01 (1.66E-01)	0.328[s]	Original Gray Level Dependence Matrix Low Gray Level Emphasis	0.02 (0 - 0.24)	0.01 (0 - 0.02)	0.002[m]
Original Gray Level Co-occurrence Matrix Inverse Difference Moment	2.08E-01 (3.57E-02)	1.80E-01 (5.15E-02)	0.034[f]	Original Gray Level Dependence Matrix High Gray Level Emphasis	1.076e+16 (2.48e+14 - 3.58e+16)	3.06e+16 (3.27e+14 - 4.81e+16)	0.057[m]
Original Gray Level Co-occurrence Matrix Maximal Correlation Coefficient	5.12E-01 (7.81E-02)	5.01E-01 (1.11E-01)	0.914[s]	Original Gray Level Dependence Matrix Small Dependence Low Gray Level Emphasis	0.01 (0 - 0.03)	0 (0 - 0.01)	<0.001[m]
Original Gray Level Co-occurrence Matrix Inverse Difference Moment Normalized	0.99 (0.97 - 0.99)	0.98 (0.97 - 0.99)	0.237[m]	Original Gray Level Dependence Matrix Small Dependence High Gray Level Emphasis	1.04e+16 (1.63e+14 - 6.29e+16)	1.43e+16 (2.15e+14 - 4.34e+16)	0.184[m]
Original Gray Level Co-occurrence Matrix Inverse Difference	2.95E-01 (3.50E-02)	2.69E-01 (5.12E-02)	0.041[f]	Original Gray Level Dependence Matrix Large Dependence Low Gray Level Emphasis	0.13 (0.03 - 2.31e+16)	0.03 (0.01 - 0.1)	0.078[m]
Original Gray Level Co-occurrence Matrix Inverse Difference Normalized	0.93 (0.89 - 0.95)	0.92 (0.89 - 0.95)	0.161[m]	Original Gray Level Dependence Matrix Large Dependence High Gray Level Emphasis	1.07e+16 (1.21e+15 - 5.03e+16)	1.32e+16 (2.31e+14 - 4.09e+16)	0.746[m]
Original Gray Level Co-occurrence Matrix Inverse Variance	2.09E-01 (3.65E-02)	1.86E-01 (5.17E-02)	0.068[f]				

[m]: Mann-Whitney U Test, [f]: T-Test for Equal Variance, [s]: T-Test for Unequal Variance, *: Mean (SD) for T-Test and Median (Min-Max) for Mann-Whitney U Test

Wild tip tümörlerde peritümoral parankimden elde olunan birinci, ikinci ve yüksek derece texture parametreleri değerlendirildiğinde; **Median** parametresi ortalama değeri (p=0.017),**GLSZM Small Area Emphasis** parametresi ortalama değeri (p=0.004), **GLSZM Size Zone Non Uniformity Normalized** parametresi ortalama değeri (p=0.005), **GLSZM Zone Percentage** parametresi ortalama değeri (p=0.001),**GLSZM Small Area High Gray Level Emphasis** parametresi ortalama değeri (p=0.034),**GLDM Dependence Non Uniformity Normalized** parametresi ortalama değeri (p=0.002) daha düşük saptanmış olup istatistiksel olarak anlamlıdır (p<0.05) (Tablo 20).

Energy parametresi ortalama değeri (p<0.001), **Maximum** parametresi ortalama değeri (p=0.027), range parametresi ortalama değeri (p=0.037), **GLCM Correlation** parametresi ortalama değeri (p=0.021),**GLCM Informal Measure of Correlation 1** parametresi ortalama değeri (p=0.033),**GLRLM Short Run Low Gray Level Emphasis** parametresi ortalama değeri (p=0.002), **GLRLM Long Run Low Gray Level Emphasis** parametresi ortalama değeri (p=0.010),**GLSZM Low Gray Level Zone Emphasis** parametresi ortalama değeri (p<0.001), **GLSZM Small Area Low Gray Level Emphasis** parametresi ortalama değeri (p<0.001), **GLSZM Large Area Low Gray Level Emphasis** parametresi ortalama değeri (p=0.002), **GLDM Small Dependence Emphasis** parametresi ortalama değeri (p=0.002), **GLDM Low Gray Level Emphasis** parametresi ortalama değeri (p=0.004),**GLDM High Gray Level Emphasis** parametresi ortalama değeri (p=0.048), **GLDM Small Dependence Low Gray Level Emphasis** parametresi ortalama değeri (p=0.001) wild tip tümörlerde peritümöral alandan yapılan analizde daha yüksek saptanmış olup istatistiksel olarak anlamlıdır (p<0.05) (Tablo 20).

Tablo 20: Wild tip tümörlerin peritümöral texture analiz parametreleri

Variable	Descriptive Value for 0*	Descriptive Value for 1*	Test P-value	Variable	Descriptive Value for 0	Descriptive Value for 1	Test P-value
Original Shape Mesh Volume	1.18e+16 (1.02e+14 - 5.11e+16)	8.3e+15 (3.65e+12 - 6.1e+16)	0.936[m]	Original Gray Level Co-occurrence Matrix Maximum Probability	0.01 (0 - 0.03)	0.01 (0 - 0.08)	0.086[m]
Original Shape Voxel Volume	1.0035e+16 (3.05e+12 - 5.19e+16)	6.41e+15 (37000 - 7.14e+16)	0.777[m]	Original Gray Level Co-occurrence Matrix Sum Average	4.01e+15 (2.14e+15 - 4.78e+16)	2.89e+15 (2.96e+14 - 3.16e+16)	0.083[m]
Original Shape Surface Area	7.145e+15 (9.25e+14 - 2.91e+16)	1.11e+16 (6.16e+14 - 2.74e+16)	0.189[m]	Original Gray Level Co-occurrence Matrix Sum Entropy	5.19e+15 (5.23e+14 - 5.65e+16)	5.29e+15 (5.47e+14 - 5.38e+16)	0.222[m]
Original Shape Surface Area to Volume Ratio	0.63 (0.42 - 1.09e+15)	0.47 (0.24 - 0.87)	0.330[m]	Original Gray Level Co-occurrence Matrix Sum of Squares	6.695e+15 (4.99e+14 - 5.64e+16)	6.42e+15 (5.73e+13 - 5.73e+16)	0.583[m]
Original Shape Sphericity	3.30E-01 (6.92E-02)	3.61E-01 (7.99E-02)	0.124[f]	Original Gray Level Run Length Matrix Short Run Emphasis	9.65E-01 (1.28E-02)	9.51E-01 (1.22E-02)	0.001[f]
Original Shape Compactness 1	0.01 (0.01 - 0.02)	0.01 (0 - 0.02)	0.175[m]	Original Gray Level Run Length Matrix Long Run Emphasis	1.125e+16 (1.09e+15 - 1.32e+16)	1.21e+16 (1.1e+15 - 1.37e+16)	0.112[m]

Original Shape Compactness 2	0.03 (0.01 - 0.14)	0.05 (0.01 - 0.14)	0.189[m]	Original Gray Level Run Length Matrix Gray Level Non Uniformity	9.695e+15 (1.29e+15 - 3.12e+16)	7.67e+15 (2.31e+14 - 4.37e+16)	0.407[m]
Original Shape Spherical Disproportion	4.26e+15 (2.57e+14 - 3.92e+16)	3.37e+15 (2.23e+14 - 3.83e+16)	0.487[m]	Original Gray Level Run Length Matrix Gray Level Non Uniformity Normalized	5.10E-02 (1.50E-02)	5.78E-02 (1.26E-02)	0.109[f]
Original Shape Maximum 3D Diameter	6.78E+15 (2.73E+15)	8.71E+15 (3.34E+15)	0.098[f]	Original Gray Level Run Length Matrix Run Length Non Uniformity	1.11e+16 (1.26e+15 - 5.9e+16)	2e+16 (9.67e+14 - 5.34e+16)	0.275[m]
Original Shape Maximum 2D Diameter Slice	6.77e+15 (6.38e+14 - 1.02e+16)	6.86e+15 (6.92e+14 - 5.9e+16)	0.122[m]	Original Gray Level Run Length Matrix Run Length Non Uniformity Normalized	9.12E-01 (3.03E-02)	8.80E-01 (2.78E-02)	0.001[f]
Original Shape Maximum 2D Diameter Column	6.7e+15 (4.95e+14 - 6.15e+16)	7e+15 (8.56e+14 - 5.65e+16)	0.560[m]	Original Gray Level Run Length Matrix Run Percentage	9.53E-01 (1.73E-02)	9.34E-01 (1.69E-02)	0.001[f]
Original Shape Maximum 2D Diameter Row	7.325e+15 (6.96e+14 - 6.38e+16)	7.02e+15 (7.93e+14 - 6.35e+16)	0.440[m]	Original Gray Level Run Length Matrix Gray Level Variance	5.915e+15 (7.66e+14 - 6.29e+16)	4.94e+15 (4.57e+14 - 4.66e+16)	0.522[m]
Original Shape Major Axis Length	7.225e+15 (6.89e+14 - 5.7e+16)	8.02e+15 (1.36e+15 - 6.16e+16)	0.708[m]	Original Gray Level Run Length Matrix Run Variance	5.46E-02 (2.27E-02)	8.23E-02 (2.78E-02)	0.001[f]
Original Shape Minor Axis Length	6.055e+15 (3.17e+14 - 5.42e+16)	6.53e+15 (2.55e+15 - 6.39e+16)	0.827[m]	Original Gray Level Run Length Matrix Run Entropy	5.03e+15 (5.07e+14 - 5.33e+16)	4.8e+15 (4.98e+13 - 4.93e+16)	0.719[m]
Original Shape Least Axis Length	2.03e+16 (1.06e+15 - 6.11e+16)	1.49e+16 (3.42e+14 - 4.97e+16)	0.390[m]	Original Gray Level Run Length Matrix Low Gray Level Run Emphasis	0.01 (0 - 0.04)	0.03 (0 - 0.21)	0.002[m]
Original Shape Elongation	6.54E-01 (1.74E-01)	6.63E-01 (1.56E-01)	0.916[f]	Original Gray Level Run Length Matrix High Gray Level Run Emphasis	1.218e+16 (3.54e+14 - 4.79e+16)	1.01e+16 (2.24e+14 - 3.36e+16)	0.270[m]
Original Shape Flatness	3.67E-01 (1.16E-01)	3.59E-01 (1.24E-01)	0.973[f]	Original Gray Level Run Length Matrix Short Run Low Gray Level Emphasis	0.01 (0 - 0.04)	0.03 (0 - 0.17)	0.002[m]
Original First Order Energy	3.125e+09 (5.7e+08 - 1.41e+10)	9.93e+09 (1.69e+09 - 4.36e+10)	<0.001[m]	Original Gray Level Run Length Matrix Short Run High Gray Level Emphasis	1.695e+16 (5.7e+14 - 4.77e+16)	1.49e+16 (9.46e+14 - 3.22e+16)	0.389[m]
Original First Order Total Energy	6.24e+15 (1.5e+15 - 3.37e+16)	4.87e+15 (1.33e+14 - 5.3e+16)	0.969[m]	Original Gray Level Run Length Matrix Long Run Low Gray Level Emphasis	0.01 (0 - 0.04)	0.03 (0.01 - 0.43)	0.010[m]
Original First Order Entropy	4.775e+15 (3.94e+15 - 4.44e+16)	4.46e+15 (4.16e+14 - 4.96e+16)	0.252[m]	Original Gray Level Run Length Matrix Long Run High Gray Level Emphasis	5.84e+15 (4.23e+14 - 3.91e+16)	1.47e+16 (1.66e+15 - 4.99e+16)	0.729[m]
Original First Order Minimum	-1020 (-1330 - -922)	-1020 (-1240 - -998)	0.755[m]	Original Gray Level Size Zone Matrix Small Area Emphasis	0.73 (0.7 - 0.84)	0.71 (0.68 - 0.8)	0.004[m]
Original First Order 10th Percentile	-875 (-8.93e+15 - -755)	-916 (-1020 - -761)	0.163[m]	Original Gray Level Size Zone Matrix Large Area Emphasis	1.44e+16 (2.56e+15 - 4.77e+16)	1.22e+16 (1.61e+14 - 5.59e+16)	0.563[m]
Original First Order 90th Percentile	-510.5 (-4.36e+16 - -165)	-544 (-6.91e+15 - -143)	0.389[m]	Original Gray Level Size Zone Matrix Gray Level Non Uniformity	1.185e+16 (4.06e+14 - 3.6e+16)	1.03e+16 (8.48e+14 - 4.9e+16)	0.457[m]
Original First Order Maximum	3.69E+02 (3.30E+02)	5.94E+02 (2.99E+02)	0.027[f]	Original Gray Level Size Zone Matrix Gray Level Non Uniformity Normalized	3.94E-02 (6.86E-03)	4.02E-02 (5.55E-03)	0.547[f]
Original First Order Mean	-6.985e+15 (-7.85e+15 - -5.16e+13)	-7.38e+15 (-8.47e+15 - -7.12e+14)	0.213[m]	Original Gray Level Size Zone Matrix Size Zone Non Uniformity	9.26e+15 (2.53e+13 - 5.15e+16)	9.9e+15 (7.59e+14 - 7.24e+16)	0.583[m]
Original First Order Median	-7.29E+02 (6.41E+01)	-7.81E+02 (8.02E+01)	0.017[f]	Original Gray Level Size Zone Matrix Size Zone Non Uniformity Normalized	0.5 (0.45 - 0.66)	0.47 (0.43 - 0.59)	0.005[m]
Original First Order Interquartile Range	152.5 (115 - 318)	189 (93 - 333)	0.405[m]	Original Gray Level Size Zone Matrix Zone Percentage	5.51E-01 (1.19E-01)	4.40E-01 (8.98E-02)	0.001[f]
Original First Order Range	1.42E+03 (4.11E+02)	1.64E+03 (3.06E+02)	0.037[f]	Original Gray Level Size Zone Matrix Gray Level Variance	7.385e+15 (7.14e+14 - 5.69e+16)	6.94e+15 (1.05e+14 - 1.33e+16)	0.214[m]
Original First Order Mean Absolute Deviation	1.1e+16 (8.07e+15 - 1.98e+16)	1.11e+16 (1.21e+15 - 2.09e+16)	0.222[m]	Original Gray Level Size Zone Matrix Zone Variance	7.105e+15 (0.5 - 3.92e+16)	6.91e+15 (3.57e+13 - 5.93e+16)	0.649[m]
Original First Order Robust Mean Absolute Deviation	7.22e+15 (7.17e+14 - 6.23e+16)	8.41e+15 (8.26e+14 - 5.95e+16)	0.293[m]	Original Gray Level Size Zone Matrix Zone Entropy	6.42e+15 (6.15e+14 - 6.4e+16)	6.61e+15 (6.73e+13 - 6.7e+16)	0.562[m]
Original First Order Root Mean Squared	6.965e+15 (6.66e+14 - 7.94e+15)	7.61e+15 (8.5e+14 - 8.59e+15)	0.208[m]	Original Gray Level Size Zone Matrix Low Gray Level Zone Emphasis	0.01 (0 - 0.04)	0.03 (0 - 0.09)	<0.001[m]
Original First Order Standard Deviation	1.51e+16 (1.35e+15 - 2.53e+16)	1.84e+16 (1.48e+14 - 2.59e+16)	0.322[m]	Original Gray Level Size Zone Matrix High Gray Level Zone Emphasis	2.305e+16 (3.25e+15 - 4.82e+16)	1.73e+16 (3.49e+14 - 4.6e+16)	0.331[m]
Original First Order Skewness	2.75e+15 (0.5 - 2.51e+16)	1.41e+16 (0.94 - 3.46e+16)	0.174[m]	Original Gray Level Size Zone Matrix Small Area Low Gray Level Emphasis	0.01 (0 - 0.03)	0.02 (0 - 0.06)	<0.001[m]
Original First Order Kurtosis	7.78e+15 (8.46e+14 - 4.63e+16)	8.48e+15 (1.6e+15 - 2.06e+16)	0.186[m]	Original Gray Level Size Zone Matrix Small Area High Gray Level Emphasis	4.645e+15 (3.22e+13 - 3.48e+16)	1.96e+16 (2.02e+15 - 5.08e+16)	0.034[m]
Original First Order Variance	6.705e+15 (2.3e+14 - 2.77e+16)	4.74e+15 (6.69e+14 - 3.8e+16)	0.859[m]	Original Gray Level Size Zone Matrix Large Area Low Gray Level Emphasis	0.08 (0.01 - 1.66e+16)	3.9e+15 (0.03 - 2.39e+16)	0.002[m]
Original First Order Uniformity	5.22E-02 (1.59E-02)	6.03E-02 (1.41E-02)	0.072[f]	Original Gray Level Size Zone Matrix Large Area High Gray Level Emphasis	5.195e+15 (1.18e+15 - 3.8e+16)	1.3e+16 (1.99e+15 - 5.38e+16)	0.201[m]
Original Gray Level Co-occurrence Matrix Autocorrelation	5.2e+15 (2.73e+15 - 3.9e+16)	9.82e+15 (7.33e+14 - 4.49e+16)	0.616[m]	Original Neighboring Gray Tone Difference Matrix Coarseness	0 (0 - 0)	0 (0 - 9.8e+10)	0.162[m]
Original Gray Level Co-occurrence Matrix Joint Average	1.535e+16 (1.73e+15 - 2.39e+16)	1.22e+16 (2.01e+14 - 7.18e+16)	0.759[m]	Original Neighboring Gray Tone Difference Matrix Contrast	0.13 (0.04 - 0.32)	0.11 (0.06 - 0.34)	0.234[m]
Original Gray Level Co-occurrence Matrix Cluster Prominence	8.185e+15 (1.54e+13 - 4.57e+16)	1.53e+16 (5.82e+14 - 4.43e+16)	0.181[m]	Original Neighboring Gray Tone Difference Matrix Busyness	0.92 (0.18 - 2.07e+16)	7.14e+15 (0.7 - 6.02e+16)	0.116[m]
Original Gray Level Co-occurrence Matrix Cluster Shade	1.0595e+16 (1.62e+15 - 3.26e+16)	4.95e+15 (8.22e+13 - 4.03e+16)	0.814[m]	Original Neighboring Gray Tone Difference Matrix Complexity	7.605e+15 (7.11e+13 - 5.92e+16)	6.64e+15 (1.1e+14 - 7.03e+16)	0.432[m]
Original Gray Level Co-occurrence Matrix Cluster Tendency	1.28e+16 (1.73e+14 - 5.18e+16)	1.1e+16 (1.17e+15 - 3.12e+16)	0.847[m]	Original Neighboring Gray Tone Difference Matrix Strength	6.88e+15 (0.76 - 2.58e+16)	2.01e+15 (0.39 - 3.88e+16)	0.572[m]
Original Gray Level Co-occurrence Matrix Contrast	6.45e+15 (5.18e+14 - 6.31e+16)	6.27e+15 (3.68e+15 - 5.82e+16)	0.477[m]	Original Gray Level Dependence Matrix Small Dependence Emphasis	4.87E-01 (1.05E-01)	3.92E-01 (7.28E-02)	0.002[g]
Original Gray Level Co-occurrence Matrix Correlation	3.40E-01 (9.66E-02)	4.15E-01 (9.39E-02)	0.021[f]	Original Gray Level Dependence Matrix Large Dependence Emphasis	8.58e+15 (4.02e+15 - 6.11e+16)	8.04e+15 (9.45e+13 - 1.59e+16)	0.039[m]
Original Gray Level Co-occurrence Matrix Difference Average	5.74e+15 (6.52e+14 - 5.85e+16)	5.66e+15 (4.94e+14 - 7.08e+16)	0.812[m]	Original Gray Level Dependence Matrix Gray Level Non Uniformity	6.97e+15 (1.02e+15 - 5.63e+16)	6.24e+15 (2.98e+14 - 2.78e+16)	0.354[m]
Original Gray Level Co-occurrence Matrix Difference Entropy	4.35e+15 (3.62e+13 -	4.31e+15 (3.99e+14 -	0.221[m]	Original Gray Level Dependence Matrix Dependence Non Uniformity	5.25e+15 (1.05e+15 -	9.44e+15 (4.46e+14 -	0.645[m]

	4.08e+16)	4.58e+16)			4.49e+16)	3.7e+16)	
Original Gray Level Co-occurrence Matrix Difference Variance	2.545e+16 (2.19e+14 - 5.65e+16)	3.94e+15 (2.29e+14 - 4.84e+16)	0.162[m]	Original Gray Level Dependence Matrix Dependence Non Uniformity Normalized	0.26 (0.16 - 0.47)	0.22 (0.16 - 0.36)	0.002[m]
Original Gray Level Co-occurrence Matrix Joint Energy	0 (0 - 0.01)	0 (0 - 0.01)	0.106[m]	Original Gray Level Dependence Matrix Gray Level Variance	6.88e+15 (6.53e+14 - 6.3e+16)	5.82e+15 (4.53e+14 - 5.13e+16)	0.520[m]
Original Gray Level Co-occurrence Matrix Joint Entropy	8.795e+15 (9.03e+14 - 9.88e+15)	8.58e+15 (8.11e+14 - 7.79e+16)	0.382[m]	Original Gray Level Dependence Matrix Dependence Variance	6.47e+15 (0.6 - 2.82e+16)	1.49e+16 (3.03e+14 - 4.27e+16)	0.085[m]
Original Gray Level Co-occurrence Matrix Informal Measure of Correlation 1	-0.07 (-0.21 - -0.03)	-0.05 (-0.08 - -0.02)	0.033[m]	Original Gray Level Dependence Matrix Dependence Entropy	6.555e+15 (6.46e+14 - 6.62e+16)	6.82e+15 (6.45e+14 - 7.25e+16)	0.178[m]
Original Gray Level Co-occurrence Matrix Informal Measure of Correlation 2	6.72E-01 (1.48E-01)	5.90E-01 (7.65E-02)	0.080[m]	Original Gray Level Dependence Matrix Low Gray Level Emphasis	0.01 (0 - 0.04)	0.03 (0 - 0.24)	0.004[m]
Original Gray Level Co-occurrence Matrix Inverse Difference Moment	1.86E-01 (4.56E-02)	2.11E-01 (3.63E-02)	0.045[f]	Original Gray Level Dependence Matrix High Gray Level Emphasis	1.865e+16 (2.48e+14 - 4.81e+16)	9.72e+15 (1.33e+15 - 3.58e+16)	0.048[m]
Original Gray Level Co-occurrence Matrix Maximal Correlation Coefficient	5.02E-01 (9.65E-02)	5.15E-01 (8.13E-02)	0.811[f]	Original Gray Level Dependence Matrix Small Dependence Low Gray Level Emphasis	0 (0 - 0.02)	0.01 (0 - 0.03)	0.001[m]
Original Gray Level Co-occurrence Matrix Inverse Difference Moment Normalized	0.99 (0.97 - 0.99)	0.99 (0.97 - 0.99)	0.269[m]	Original Gray Level Dependence Matrix Small Dependence High Gray Level Emphasis	1.12e+16 (1.63e+14 - 4.34e+16)	1.07e+16 (9.08e+14 - 6.29e+16)	0.531[m]
Original Gray Level Co-occurrence Matrix Inverse Difference	2.74E-01 (4.57E-02)	2.98E-01 (3.53E-02)	0.076[f]	Original Gray Level Dependence Matrix Large Dependence Low Gray Level Emphasis	0.05 (0.01 - 0.26)	0.23 (0.03 - 2.31e+16)	0.078[m]
Original Gray Level Co-occurrence Matrix Inverse Difference Normalized	9.21E-01 (1.75E-02)	9.28E-01 (1.29E-02)	0.265[f]	Original Gray Level Dependence Matrix Large Dependence High Gray Level Emphasis	1.185e+16 (2.31e+14 - 4.09e+16)	1.04e+16 (1.21e+15 - 5.03e+16)	0.500[m]
Original Gray Level Co-occurrence Matrix Inverse Variance	1.92E-01 (4.60E-02)	2.11E-01 (3.77E-02)	0.146[f]				

[m]: Mann-Whitney U Test, [f]: T-Test for Equal Variance, [*]: T-Test for Unequal Variance, *: Mean (SD) for T-Test and Median (Min-Max) for Mann-Whitney U Test

Uzak metastazı saptanmış tümörlerin peritümöral parankimden elde olunan birinci, ikinci ve yüksek derece texture analiz parametreleri incelendiğinde;**Robust Mean Absolute Deviation** parametresi ortalama değeri ($p<0.001$), **GLCM Difference Entropy** parametresi ortalama değeri ($p=0.008$),**GLDM Gray Level Variance** parametresi ortalama değeri ($p=0.004$) daha yüksek saptanmış olup istatistiksel olarak anlamlıdır ($p<0.05$) (Tablo 21).

Tablo 21: Uzak metastazı saptanan tümörlerin peritümöral parankim texture analiz parametreleri

Variable	Descriptive Value for 0*	Descriptive Value for 1*	Test P-value	Variable	Descriptive Value for 0	Descriptive Value for 1	Test P-value
Original Shape Mesh Volume	1.9e+16 (1.71e+15 - 4.01e+16)	8.64e+15 (3.65e+12 - 6.1e+16)	0.298[m]	Original Gray Level Co-occurrence Matrix Maximum Probability	0.01 (0.01 - 0.02)	0.01 (0 - 0.08)	0.345[m]
Original Shape Voxel Volume	1.92e+16 (3.1e+11 - 7.14e+16)	6.41e+15 (37000 - 5.19e+16)	0.176[m]	Original Gray Level Co-occurrence Matrix Sum Average	3.28e+15 (2.96e+14 - 3.16e+16)	3.45e+15 (1.69e+15 - 4.78e+16)	0.766[m]
Original Shape Surface Area	9.595e+15 (1.04e+15 - 2.3e+16)	9.31e+15 (6.16e+14 - 2.91e+16)	0.864[m]	Original Gray Level Co-occurrence Matrix Sum Entropy	5.455e+15 (5.47e+14 - 5.65e+16)	5.16e+15 (5.23e+14 - 5.38e+16)	0.312[m]
Original Shape Surface Area to Volume Ratio	0.49 (0.34 - 0.72)	0.52 (0.24 - 1.09e+15)	0.599[m]	Original Gray Level Co-occurrence Matrix Sum of Squares	6.205e+15 (5.73e+13 - 4.02e+16)	6.42e+15 (4.99e+14 - 5.73e+16)	0.178[m]
Original Shape Sphericity	3.73E-01 (7.95E-02)	3.40E-01 (7.47E-02)	0.196[f]	Original Gray Level Run Length Matrix Short Run Emphasis	9.56E-01 (1.35E-02)	9.57E-01 (1.45E-02)	0.987[f]
Original Shape Compactness 1	0.01 (0.01 - 0.02)	0.01 (0 - 0.02)	0.240[m]	Original Gray Level Run Length Matrix Long Run Emphasis	1.19e+16 (1.09e+15 - 1.3e+16)	1.18e+16 (1.09e+15 - 1.37e+16)	0.458[m]
Original Shape Compactness 2	0.05 (0.01 - 0.14)	0.03 (0.01 - 0.14)	0.273[m]	Original Gray Level Run Length Matrix Gray Level Non Uniformity	6.435e+15 (2.31e+14 - 4.37e+16)	9.19e+15 (1.29e+15 - 3.12e+16)	0.758[m]
Original Shape Spherical Disproportion	1.179e+16 (2.23e+14 - 3.08e+16)	3.55e+15 (2.29e+14 - 3.92e+16)	0.940[m]	Original Gray Level Run Length Matrix Gray Level Non Uniformity Normalized	5.13E-02 (1.14E-02)	5.58E-02 (1.46E-02)	0.310[f]
Original Shape Maximum 3D Diameter	7.59E+15 (3.49E+15)	7.92E+15 (3.16E+15)	0.987[f]	Original Gray Level Run Length Matrix Run Length Non Uniformity	1.445e+16 (9.67e+14 - 5.27e+16)	1.36e+16 (1.26e+15 - 5.9e+16)	0.919[m]
Original Shape Maximum 2D Diameter Slice	6.695e+15 (6.92e+14 - 1.11e+16)	6.86e+15 (6.38e+14 - 5.9e+16)	0.408[m]	Original Gray Level Run Length Matrix Run Length Non Uniformity Normalized	8.92E-01 (3.10E-02)	8.95E-01 (3.38E-02)	0.987[f]
Original Shape Maximum 2D Diameter Column	6.95e+15 (2.09e+15 - 4.67e+16)	6.84e+15 (4.95e+14 - 6.15e+16)	0.474[m]	Original Gray Level Run Length Matrix Run Percentage	9.42E-01 (1.80E-02)	9.43E-01 (2.00E-02)	0.919[f]
Original Shape Maximum 2D Diameter Row	7.29e+15 (5.69e+15 - 2.11e+16)	7.32e+15 (6.96e+14 - 6.38e+16)	0.578[m]	Original Gray Level Run Length Matrix Gray Level Variance	5.27e+15 (7.84e+14 - 4.66e+16)	5.48e+15 (4.57e+14 - 6.29e+16)	0.937[m]
Original Shape Major Axis Length	7.455e+15 (3.6e+15 - 1.25e+16)	7.66e+15 (6.89e+14 - 6.16e+16)	0.477[m]	Original Gray Level Run Length Matrix Run Variance	6.92E-02 (2.53E-02)	7.02E-02 (3.03E-02)	0.857[f]

Original Shape Minor Axis Length	7.82e+15 (3.72e+15 - 6.03e+16)	6.27e+15 (3.17e+14 - 6.39e+16)	0.439[n]	Original Gray Level Run Length Matrix Run Entropy	5.18e+15 (5.13e+14 - 4.93e+16)	4.82e+15 (4.98e+13 - 5.33e+16)	0.526[n]
Original Shape Least Axis Length	4.15e+15 (3.42e+14 - 4.17e+16)	2.02e+16 (4.31e+14 - 6.11e+16)	0.280[n]	Original Gray Level Run Length Matrix Low Gray Level Run Emphasis	0.02 (0 - 0.06)	0.01 (0 - 0.21)	0.848[n]
Original Shape Elongation	6.44E-01 (2.04E-01)	6.63E-01 (1.52E-01)	0.772[f]	Original Gray Level Run Length Matrix High Gray Level Run Emphasis	1.265e+16 (2.24e+14 - 4.79e+16)	9.78e+15 (3.54e+14 - 4.43e+16)	0.763[n]
Original Shape Flatness	3.93E-01 (8.45E-02)	3.54E-01 (1.27E-01)	0.239[f]	Original Gray Level Run Length Matrix Short Run Low Gray Level Emphasis	0.02 (0 - 0.06)	0.01 (0 - 0.17)	0.905[n]
Original First Order Energy	7.105e+09 (5.7e+08 - 4.36e+10)	7.42e+09 (8e+08 - 4.3e+10)	0.545[n]	Original Gray Level Run Length Matrix Short Run High Gray Level Emphasis	2.02e+16 (1.26e+15 - 4.71e+16)	1.49e+16 (5.7e+14 - 4.77e+16)	0.411[n]
Original First Order Total Energy	8.49e+15 (1.15e+15 - 2.26e+16)	5.85e+15 (1.33e+14 - 5.3e+16)	0.941[n]	Original Gray Level Run Length Matrix Long Run Low Gray Level Emphasis	0.03 (0.01 - 0.08)	0.01 (0 - 0.43)	0.677[n]
Original First Order Entropy	4.87e+15 (4.2e+15 - 4.96e+16)	4.54e+15 (4.16e+14 - 4.44e+16)	0.142[n]	Original Gray Level Run Length Matrix Long Run High Gray Level Emphasis	1.445e+16 (2.52e+15 - 4.99e+16)	1.12e+16 (4.23e+14 - 3.91e+16)	0.526[n]
Original First Order Minimum	-1020 (-1020 - -1020)	-1020 (-1330 - -922)	0.063[n]	Original Gray Level Size Zone Matrix Small Area Emphasis	0.72 (0.68 - 0.79)	0.72 (0.68 - 0.84)	0.487[n]
Original First Order 10th Percentile	-902 (-963 - -761)	-901 (-8.93e+15 - -755)	0.451[n]	Original Gray Level Size Zone Matrix Large Area Emphasis	1.135e+16 (3.34e+15 - 5.13e+16)	1.26e+16 (1.61e+14 - 5.59e+16)	0.849[n]
Original First Order 90th Percentile	-509 (-4.36e+16 - -346)	-519 (-673 - -143)	0.232[n]	Original Gray Level Size Zone Matrix Gray Level Non Uniformity	8.565e+15 (8.48e+14 - 4.51e+16)	1.11e+16 (4.06e+14 - 4.9e+16)	0.553[n]
Original First Order Maximum	5.15E+02 (3.07E+02)	4.88E+02 (3.39E+02)	0.865[f]	Original Gray Level Size Zone Matrix Gray Level Non Uniformity Normalized	3.77E-02 (4.76E-03)	4.05E-02 (6.36E-03)	0.239[f]
Original First Order Mean	-6.745e+15 (-8.44e+15 - -6.63e+14)	-7.36e+15 (-8.47e+15 - -5.16e+13)	0.218[n]	Original Gray Level Size Zone Matrix Size Zone Non Uniformity	1.595e+16 (4.83e+14 - 3.59e+16)	9.56e+15 (2.53e+13 - 7.24e+16)	0.548[n]
Original First Order Median	-7.52E+02 (7.70E+01)	-7.60E+02 (7.83E+01)	0.695[f]	Original Gray Level Size Zone Matrix Size Zone Non Uniformity Normalized	0.48 (0.43 - 0.58)	0.48 (0.43 - 0.66)	0.486[n]
Original First Order Interquartile Range	196 (115 - 240)	162 (93 - 333)	0.668[n]	Original Gray Level Size Zone Matrix Zone Percentage	4.77E-01 (1.12E-01)	4.93E-01 (1.19E-01)	0.835[f]
Original First Order Range	1.54E+03 (3.07E+02)	1.54E+03 (3.88E+02)	0.971[f]	Original Gray Level Size Zone Matrix Gray Level Variance	7.345e+15 (7.39e+14 - 1.05e+16)	7.01e+15 (1.05e+14 - 5.69e+16)	0.387[n]
Original First Order Mean Absolute Deviation	1.26e+16 (1.34e+15 - 1.7e+16)	1.1e+16 (1.21e+15 - 2.09e+16)	0.838[n]	Original Gray Level Size Zone Matrix Zone Variance	4.42e+15 (8.33e+14 - 5.93e+16)	1.06e+16 (0.5 - 4.78e+16)	0.540[n]
Original First Order Robust Mean Absolute Deviation	5.91e+15 (8.26e+14 - 1.01e+16)	8.41e+15 (7.17e+14 - 6.23e+16)	<0.001[n]	Original Gray Level Size Zone Matrix Zone Entropy	6.645e+15 (6.27e+15 - 6.7e+16)	6.52e+15 (6.73e+13 - 6.53e+16)	0.988[n]
Original First Order Root Mean Squared	7.425e+15 (6.08e+15 - 8.57e+15)	7.27e+15 (6.66e+14 - 8.59e+15)	0.251[n]	Original Gray Level Size Zone Matrix Low Gray Level Zone Emphasis	0.02 (0 - 0.06)	0.01 (0 - 0.09)	0.530[n]
Original First Order Standard Deviation	1.795e+16 (1.79e+15 - 2.29e+16)	1.54e+16 (1.48e+14 - 2.59e+16)	0.950[n]	Original Gray Level Size Zone Matrix High Gray Level Zone Emphasis	4.74e+15 (3.49e+14 - 3.72e+16)	2.16e+16 (1.92e+15 - 4.82e+16)	0.103[n]
Original First Order Skewness	1.455e+16 (1.54e+14 - 2.54e+16)	2.64e+15 (0.5 - 3.46e+16)	0.367[n]	Original Gray Level Size Zone Matrix Small Area Low Gray Level Emphasis	0.02 (0 - 0.04)	0.01 (0 - 0.06)	0.421[n]
Original First Order Kurtosis	6.62e+15 (5.41e+15 - 1.36e+16)	9.17e+15 (8.46e+14 - 4.63e+16)	0.300[n]	Original Gray Level Size Zone Matrix Small Area High Gray Level Emphasis	1.855e+16 (2.18e+15 - 4.02e+16)	1.65e+16 (3.22e+13 - 5.08e+16)	0.877[n]
Original First Order Variance	4.865e+15 (3.19e+15 - 3.19e+16)	5.42e+15 (2.3e+14 - 3.8e+16)	0.696[n]	Original Gray Level Size Zone Matrix Large Area Low Gray Level Emphasis	0.29 (0.02 - 2.39e+16)	0.3 (0.01 - 2.39e+16)	0.412[n]
Original First Order Uniformity	5.27E-02 (1.22E-02)	5.78E-02 (1.60E-02)	0.287[f]	Original Gray Level Size Zone Matrix Large Area High Gray Level Emphasis	1.475e+16 (1.28e+15 - 3.11e+16)	6.79e+15 (1.18e+15 - 5.38e+16)	0.485[n]
Original Gray Level Co-occurrence Matrix Autocorrelation	1.224e+16 (2.78e+15 - 2.4e+16)	9.7e+15 (7.33e+14 - 4.49e+16)	0.981[n]	Original Neighboring Gray Tone Difference Matrix Coarseness	0 (0 - 9.8e+10)	0 (0 - 8.9e+10)	0.489[n]
Original Gray Level Co-occurrence Matrix Joint Average	1.165e+16 (1.58e+15 - 1.87e+16)	1.37e+16 (2.01e+14 - 7.18e+16)	0.330[n]	Original Neighboring Gray Tone Difference Matrix Contrast	0.11 (0.06 - 0.32)	0.12 (0.04 - 0.34)	0.789[n]
Original Gray Level Co-occurrence Matrix Cluster Prominence	1.815e+16 (1.33e+15 - 3.11e+16)	1.12e+16 (1.54e+13 - 4.57e+16)	0.380[n]	Original Neighboring Gray Tone Difference Matrix Busyness	5.755e+15 (0.18 - 1.39e+16)	4.05e+15 (0.18 - 6.02e+16)	0.593[n]
Original Gray Level Co-occurrence Matrix Cluster Shade	4.93e+15 (2.54e+15 - 3.39e+16)	8.39e+15 (8.22e+13 - 4.03e+16)	0.426[n]	Original Neighboring Gray Tone Difference Matrix Complexity	7.615e+15 (4.3e+14 - 9.92e+15)	7.24e+15 (7.11e+13 - 7.03e+16)	0.417[n]
Original Gray Level Co-occurrence Matrix Cluster Tendency	1.145e+16 (1.17e+15 - 2.14e+16)	1.16e+16 (1.73e+14 - 5.18e+16)	0.765[n]	Original Neighboring Gray Tone Difference Matrix Strength	9.73e+15 (0.56 - 3.13e+16)	4.77e+15 (0.39 - 3.88e+16)	0.452[n]
Original Gray Level Co-occurrence Matrix Contrast	5.355e+15 (4.19e+15 - 1.28e+16)	6.28e+15 (5.18e+14 - 6.31e+16)	0.055[n]	Original Gray Level Dependence Matrix Small Dependence Emphasis	0.42 (0.3 - 0.6)	0.42 (0.28 - 0.7)	0.660[n]
Original Gray Level Co-occurrence Matrix Correlation	4.13E-01 (8.80E-02)	3.73E-01 (1.04E-01)	0.287[f]	Original Gray Level Dependence Matrix Large Dependence Emphasis	8.195e+15 (4.02e+15 - 1.44e+16)	8.12e+15 (9.45e+13 - 6.11e+16)	0.398[n]
Original Gray Level Co-occurrence Matrix Difference Average	5.69e+15 (4.94e+14 - 7.08e+16)	5.66e+15 (5.14e+14 - 5.85e+16)	0.937[n]	Original Gray Level Dependence Matrix Gray Level Non Uniformity	5.525e+15 (3.47e+14 - 2.53e+16)	7.43e+15 (2.98e+14 - 5.63e+16)	0.313[n]
Original Gray Level Co-occurrence Matrix Difference Entropy	4.05e+15 (3.6e+15 - 3.79e+16)	4.46e+15 (3.62e+13 - 4.58e+16)	0.008[n]	Original Gray Level Dependence Matrix Dependence Non Uniformity	1.7245e+16 (1.14e+15 - 4.49e+16)	5.46e+15 (4.46e+14 - 3.65e+16)	0.055[n]
Original Gray Level Co-occurrence Matrix Joint Energy	0 (0 - 0.01)	0 (0 - 0.01)	0.330[n]	Original Gray Level Dependence Matrix Gray Level Variance	5.73e+15 (4.53e+14 - 8.93e+15)	6.73e+15 (5.71e+14 - 6.3e+16)	0.004[n]
Original Gray Level Co-occurrence Matrix Joint Entropy	8.895e+15 (8.13e+15 - 9.51e+15)	8.58e+15 (8.11e+14 - 7.79e+16)	0.818[n]	Original Gray Level Dependence Matrix Dependence Variance	9.335e+15 (0.94 - 4.04e+16)	1.12e+16 (0.6 - 4.27e+16)	0.897[n]
Original Gray Level Co-occurrence Matrix Informal Measure of Correlation 1	-0.06 (-0.17 - -0.04)	-0.06 (-0.21 - -0.02)	0.818[n]	Original Gray Level Dependence Matrix Dependence Entropy	6.83e+15 (6.49e+15 - 6.82e+16)	6.68e+15 (6.45e+14 - 7.25e+16)	0.538[n]
Original Gray Level Co-occurrence Matrix Informal Measure of Correlation 2	6.45E-01 (1.12E-01)	6.21E-01 (1.23E-01)	0.561[f]	Original Gray Level Dependence Matrix Low Gray Level Emphasis	0.02 (0 - 0.07)	0.01 (0 - 0.24)	0.786[n]
Original Gray Level Co-occurrence Matrix Inverse Difference Moment	1.97E-01 (4.23E-02)	2.01E-01 (4.27E-02)	0.897[f]	Original Gray Level Dependence Matrix High Gray Level Emphasis	7.99e+15 (1.86e+15 - 4.74e+16)	1.46e+16 (2.48e+14 - 4.81e+16)	0.533[n]
Original Gray Level Co-occurrence Matrix Maximal Correlation Coefficient	5.29E-01 (7.01E-02)	5.03E-01 (9.20E-02)	0.310[f]	Original Gray Level Dependence Matrix Small Dependence Low Gray Level Emphasis	0.01 (0 - 0.02)	0 (0 - 0.03)	0.601[n]
Original Gray Level Co-occurrence Matrix Inverse Difference Moment Normalized	0.99 (0.97 - 0.99)	0.99 (0.97 - 0.99)	0.802[n]	Original Gray Level Dependence Matrix Small Dependence High Gray Level	1.415e+16 (1.91e+15 -	9.76e+15 (1.63e+14 -	0.060[n]

				Emphasis	6.29e+16)	4.34e+16)	
Original Gray Level Co-occurrence Matrix Inverse Difference	2.85E-01 (4.22E-02)	2.88E-01 (4.20E-02)	0.897[f]	Original Gray Level Dependence Matrix Large Dependence Low Gray Level Emphasis	0.17 (0.02 - 0.97)	0.09 (0.01 - 2.31e+16)	0.079[m]
Original Gray Level Co-occurrence Matrix Inverse Difference Normalized	0.93 (0.89 - 0.94)	0.93 (0.89 - 0.95)	0.864[m]	Original Gray Level Dependence Matrix Large Dependence High Gray Level Emphasis	1.085e+16 (7.98e+15 - 3.24e+16)	1.12e+16 (2.31e+14 - 5.03e+16)	0.958[m]
Original Gray Level Co-occurrence Matrix Inverse Variance	2.03E-01 (4.21E-02)	2.03E-01 (4.29E-02)	0.942[f]				

[m]: Mann-Whitney U Test, [f]: T-Test for Equal Variance, [*]: T-Test for Unequal Variance, *: Mean (SD) for T-Test and Median (Min-Max) for Mann-Whitney U Test

Mediasinal lenf nodlarına metastaz yapan tümörlerin peritümöral parankimden elde olunan birinci, ikinci ve yüksek derece texture parametreleri incelendiğinde;**Uniformity** parametresi ortalama değeri (p=0.042),**GLCM Joint Energy** parametresi ortalama değeri (p=0.040),**GLCM Inverse Difference Moment** parametresi ortalama değeri (p=0.048), **GLCM Inverse Difference Moment Normalized** parametresi ortalama değeri (p=0.015),**GLCM Inverse Difference** parametresi ortalama değeri (p=0.037), **GLCM Inverse Difference Normalized** parametresi ortalama değeri (p=0.015),**GLRLM Gray Level Non Uniformity Normalized**parametresi ortalama değeri (P=0.045), GLRLM Run Variance parametresi ortalama değeri (p=0.030),**GLSZM Gray Level Non Uniformity Normalized** parametresi ortalama değeri (p=0.027) daha düşük saptanmış olup **GLCM Sum Average** parametresi ortalama değeri (p=0.035),**GLRLM Short Run Emphasis** parametresi ortalama değeri (p=0.017), **GLRLM Run Length Non Uniformity Normalized** parametresi ortalama değeri (p=0.016),**GLRLM Run Percentage** parametresi ortalama değeri (p=0.019),**GLSZM Small Area Emphasis** parametresi ortalama değeri (p=0.001),**GLSZM Large Area Emphasis** parametresi ortalama değeri (p=0.038),**GLSZM Size Zone Non Uniformity Normalized** parametresi ortalama değeri (p<0.001), **GLSZM Zone Percentage** parametresi ortalama değeri (p=0.013),**NGTDM Matrix Contrast** parametresi ortalama değeri (p=0.013), **GLDM Small Dependence Emphasis** parametresi ortalama değeri (p=0.009), **GLDM Dependence Non Uniformity Normalized** parametresi ortalama değeri (p=0.016) daha düşük saptanmış olup istatistiksel olarak anlamlıdır (p<0.05) (Tablo 22).

Tablo 22: Mediastinal lenf nodu metastazı saptanan tümörlerin peritümöral parankim texture analiz parametreleri

Variable	Descriptive Value for 0*	Descriptive Value for 1*	Test P-value	Variable	Descriptive Value for 0	Descriptive Value for 1	Test P-value
Original Shape Mesh Volume	1.01e+16 (2.06e+15 - 6.1e+16)	8.935e+15 (3.65e+12 - 5.11e+16)	0.711[m]	Original Gray Level Co-occurrence Matrix Maximum Probability	0.01 (0.01 - 0.06)	0.01 (0 - 0.08)	0.253[m]
Original Shape Voxel Volume	6.13e+15 (3.1e+11 - 7.14e+16)	7.03e+15 (37000 - 5.19e+16)	0.554[m]	Original Gray Level Co-occurrence Matrix Sum Average	2.64e+15 (2.96e+14 - 2.8e+16)	3.975e+15 (1.69e+15 - 4.78e+16)	0.035[m]
Original Shape Surface Area	1.46e+16 (9.6e+14 - 2.45e+16)	8.25e+15 (6.16e+14 - 2.91e+16)	0.460[m]	Original Gray Level Co-occurrence Matrix Sum Entropy	5.11e+15 (5.47e+14 - 5.27e+16)	5.335e+15 (5.23e+14 - 5.65e+16)	0.627[m]
Original Shape Surface Area to Volume Ratio	0.47 (0.24 - 0.71)	0.56 (0.3 - 1.09e+15)	0.530[m]	Original Gray Level Co-occurrence Matrix Sum of Squares	5.09e+15 (1.9e+15 - 5.73e+16)	6.82e+15 (5.73e+13 - 5.64e+16)	0.990[m]
Original Shape Sphericity	3.86E-01 (9.07E-02)	3.31E-01 (6.45E-02)	0.061[f]	Original Gray Level Run Length Matrix Short Run Emphasis	9.48E-01 (1.33E-02)	9.61E-01 (1.31E-02)	0.017[f]
Original Shape Compactness 1	1.30E-02 (4.49E-03)	1.03E-02 (3.03E-03)	0.061[s]	Original Gray Level Run Length Matrix Long Run Emphasis	1.21e+16 (1.21e+15 - 1.37e+16)	1.17e+16 (1.09e+15 - 1.32e+16)	0.092[m]
Original Shape Compactness 2	0.05 (0.01 - 0.14)	0.03 (0.01 - 0.14)	0.063[m]	Original Gray Level Run Length Matrix Gray Level Non Uniformity	1.43e+16 (2.37e+15 - 4.37e+16)	7.385e+15 (2.31e+14 - 3.12e+16)	0.149[m]
Original Shape Spherical Disproportion	4.21e+15 (2.23e+14 - 3.3e+16)	3.815e+15 (2.29e+14 - 3.92e+16)	0.700[m]	Original Gray Level Run Length Matrix Gray Level Non Uniformity Normalized	6.18E-02 (1.25E-02)	5.20E-02 (1.37E-02)	0.045[f]
Original Shape Maximum 3D Diameter	7.30E+15 (2.90E+15)	8.07E+15 (3.33E+15)	0.612[f]	Original Gray Level Run Length Matrix Run Length Non Uniformity	1.46e+16 (9.67e+14 - 5.27e+16)	1.3e+16 (1.26e+15 - 5.9e+16)	0.785[m]
Original Shape Maximum 2D Diameter Slice	6.86e+15 (8.72e+14 - 5.9e+16)	6.77e+15 (6.38e+14 - 5.08e+16)	0.268[m]	Original Gray Level Run Length Matrix Run Length Non Uniformity Normalized	8.74E-01 (3.02E-02)	9.02E-01 (3.08E-02)	0.016[f]
Original Shape Maximum 2D Diameter Column	6.84e+15 (4.04e+15 - 5.65e+16)	6.945e+15 (4.95e+14 - 6.15e+16)	0.804[m]	Original Gray Level Run Length Matrix Run Percentage	9.31E-01 (1.84E-02)	9.47E-01 (1.80E-02)	0.019[f]
Original Shape Maximum 2D Diameter Row	6.37e+15 (3.9e+15 - 6.38e+16)	7.325e+15 (6.96e+14 - 5.81e+16)	0.338[m]	Original Gray Level Run Length Matrix Gray Level Variance	4.72e+15 (8.63e+14 - 4.66e+16)	5.8e+15 (4.57e+14 - 6.29e+16)	0.954[m]
Original Shape Major Axis Length	7.66e+15 (4.17e+15 - 6.16e+16)	7.505e+15 (6.89e+14 - 5.7e+16)	0.478[m]	Original Gray Level Run Length Matrix Run Variance	8.63E-02 (3.04E-02)	6.33E-02 (2.60E-02)	0.030[f]
Original Shape Minor Axis Length	4.76e+15 (5.97e+14 - 6.39e+16)	6.53e+15 (3.17e+14 - 5.84e+16)	0.510[m]	Original Gray Level Run Length Matrix Run Entropy	4.77e+15 (5.13e+14 - 4.87e+16)	4.985e+15 (4.98e+13 - 5.33e+16)	0.867[m]
Original Shape Least Axis Length	1.78e+16 (2.21e+15 - 3.89e+16)	1.525e+16 (3.42e+14 - 6.11e+16)	0.689[m]	Original Gray Level Run Length Matrix Low Gray Level Run Emphasis	0.02 (0 - 0.2)	0.01 (0 - 0.21)	0.136[m]
Original Shape Elongation	6.72E-01 (1.50E-01)	6.54E-01 (1.69E-01)	0.724[f]	Original Gray Level Run Length Matrix High Gray Level Run Emphasis	4.25e+15 (2.24e+14 - 3.37e+16)	1.43e+16 (3.54e+14 - 4.79e+16)	0.217[m]
Original Shape Flatness	3.72E-01 (1.04E-01)	3.59E-01 (1.26E-01)	0.666[f]	Original Gray Level Run Length Matrix Short Run Low Gray Level Emphasis	0.02 (0 - 0.16)	0.01 (0 - 0.17)	0.125[m]
Original First Order Energy	9.93e+09 (1.69e+09 - 4.36e+10)	6.825e+09 (5.7e+08 - 4.3e+10)	0.489[m]	Original Gray Level Run Length Matrix Short Run High Gray Level Emphasis	1.58e+16 (9.46e+14 - 2.97e+16)	1.51e+16 (5.7e+14 - 4.77e+16)	0.774[m]
Original First Order Total Energy	3.22e+15 (1.15e+15 - 1.88e+16)	6.24e+15 (1.33e+14 - 5.3e+16)	0.096[m]	Original Gray Level Run Length Matrix Long Run Low Gray Level Emphasis	0.03 (0.01 - 0.42)	0.01 (0 - 0.43)	0.196[m]
Original First Order Entropy	4.42e+15 (3.94e+15 - 4.96e+16)	4.75e+15 (4.16e+14 - 4.55e+16)	0.216[m]	Original Gray Level Run Length Matrix Long Run High Gray Level Emphasis	1.47e+16 (4.23e+14 - 4.99e+16)	6.63e+15 (4.96e+14 - 3.91e+16)	0.465[m]
Original First Order Minimum	-1020 (-1330 - -998)	-1020 (-1290 - -922)	0.915[m]	Original Gray Level Size Zone Matrix Small Area Emphasis	0.71 (0.68 - 0.75)	0.72 (0.69 - 0.84)	0.001[m]
Original First Order 10th Percentile	-915 (-8.93e+15 - -761)	-896.5 (-8.92e+15 - -755)	0.511[m]	Original Gray Level Size Zone Matrix Large Area Emphasis	1.22e+16 (2.56e+15 - 3.48e+16)	1.35e+16 (1.61e+14 - 5.59e+16)	0.038[m]
Original First Order 90th Percentile	-591 (-4.58e+15 - -346)	-505 (-4.36e+16 - -143)	0.577[m]	Original Gray Level Size Zone Matrix Gray Level Non Uniformity	9.47e+15 (8.48e+14 - 4.9e+16)	1.24e+16 (4.06e+14 - 4.77e+16)	0.744[m]
Original First Order Maximum	5.49E+02 (3.37E+02)	4.72E+02 (3.29E+02)	0.640[f]	Original Gray Level Size Zone Matrix Gray Level Non Uniformity Normalized	4.27E-02 (5.16E-03)	3.87E-02 (6.16E-03)	0.027[r]
Original First Order Mean	-7.7e+15 (-8.45e+15 - -5.81e+15)	-7.065e+15 (-8.47e+15 - -5.16e+13)	0.102[m]	Original Gray Level Size Zone Matrix Size Zone Non Uniformity	9.66e+15 (3.66e+15 - 2.86e+16)	9.83e+15 (2.53e+13 - 7.24e+16)	0.381[m]
Original First Order Median	-7.89E+02 (7.64E+01)	-7.45E+02 (7.51E+01)	0.054[f]	Original Gray Level Size Zone Matrix Size Zone Non Uniformity Normalized	0.47 (0.43 - 0.53)	0.49 (0.44 - 0.66)	<0.001[m]
Original First Order Interquartile Range	150 (93 - 224)	175 (115 - 333)	0.147[m]	Original Gray Level Size Zone Matrix Zone Percentage	4.20E-01 (9.03E-02)	5.17E-01 (1.15E-01)	0.013[r]
Original First Order Range	1.59E+03 (3.70E+02)	1.52E+03 (3.72E+02)	0.695[f]	Original Gray Level Size Zone Matrix Gray Level Variance	6.67e+15 (1.05e+14 - 4.78e+16)	7.385e+15 (7.14e+14 - 5.69e+16)	0.689[m]
Original First Order Mean Absolute Deviation	9.69E+15 (4.27E+15)	1.13E+16 (4.98E+15)	0.291[f]	Original Gray Level Size Zone Matrix Zone Variance	1.25e+16 (8.33e+14 - 5.93e+16)	6.61e+15 (0.5 - 4.78e+16)	0.129[m]
Original First Order Robust Mean Absolute Deviation	8.41e+15 (8.26e+14 - 6.23e+16)	7.97e+15 (7.17e+14 - 6.1e+16)	0.741[m]	Original Gray Level Size Zone Matrix Zone Entropy	6.6e+15 (6.34e+15 - 6.36e+16)	6.54e+15 (6.73e+13 - 6.7e+16)	0.718[m]
Original First Order Root Mean Squared	7.61e+15 (7.65e+14 - 8.59e+15)	7.255e+15 (6.66e+14 - 8.57e+15)	0.931[m]	Original Gray Level Size Zone Matrix Low Gray Level Zone Emphasis	0.03 (0 - 0.09)	0.01 (0 - 0.09)	0.133[m]
Original First Order Standard Deviation	1.65e+16 (2.33e+15 - 2.14e+16)	1.56e+16 (1.48e+14 - 2.59e+16)	0.736[m]	Original Gray Level Size Zone Matrix High Gray Level Zone Emphasis	1.96e+16 (3.49e+14 - 4.05e+16)	1.885e+16 (2.19e+15 - 4.82e+16)	0.494[m]
Original First Order Skewness	1.41e+16 (1.54e+14 - 3.46e+16)	2.855e+15 (0.5 - 2.51e+16)	0.282[m]	Original Gray Level Size Zone Matrix Small Area Low Gray Level Emphasis	0.02 (0 - 0.05)	0.01 (0 - 0.06)	0.170[m]
Original First Order Kurtosis	8.48e+15 (8.46e+14 - 2.06e+16)	8.23e+15 (3.48e+15 - 4.63e+16)	0.383[m]	Original Gray Level Size Zone Matrix Small Area High Gray Level Emphasis	1.98e+16 (3.08e+15 - 4.02e+16)	5.51e+15 (3.22e+13 - 5.08e+16)	0.161[m]
Original First Order Variance	3.93e+15 (2e+15 - 3.19e+16)	5.935e+15 (2.3e+14 - 3.8e+16)	0.448[m]	Original Gray Level Size Zone Matrix Large Area Low Gray Level Emphasis	0.62 (0.14 - 1.66e+16)	0.16 (0.01 - 2.39e+16)	0.748[m]
Original First Order Uniformity	6.43E-02 (1.38E-02)	5.36E-02 (1.50E-02)	0.042[f]	Original Gray Level Size Zone Matrix Large Area High Gray Level Emphasis	1.3e+16 (1.99e+15 -	7.625e+15 (1.18e+15 -	0.140[m]

					5.38e+16)	3.8e+16)	
Original Gray Level Co-occurrence Matrix Autocorrelation	1.49e+16 (3.78e+15 - 3.05e+16)	5.2e+15 (7.33e+14 - 4.49e+16)	0.244[m]	Original Neighboring Gray Tone Difference Matrix Coarseness	0 (0 - 9.8e+10)	0 (0 - 8.9e+10)	0.465[m]
Original Gray Level Co-occurrence Matrix Joint Average	1.32e+16 (8.02e+14 - 7.18e+16)	1.3e+16 (2.01e+14 - 2.39e+16)	0.194[m]	Original Neighboring Gray Tone Difference Matrix Contrast	0.09 (0.04 - 0.19)	0.13 (0.05 - 0.34)	0.013[m]
Original Gray Level Co-occurrence Matrix Cluster Prominence	1.03e+16 (5.82e+14 - 4.43e+16)	1.25e+16 (1.54e+13 - 4.57e+16)	0.846[m]	Original Neighboring Gray Tone Difference Matrix Busyness	8.64e+15 (0.7 - 1.64e+16)	3.55e+15 (0.18 - 6.02e+16)	0.900[m]
Original Gray Level Co-occurrence Matrix Cluster Shade	4.95e+15 (8.22e+13 - 2.79e+16)	7.86e+15 (1.62e+15 - 4.03e+16)	0.202[m]	Original Neighboring Gray Tone Difference Matrix Complexity	7.15e+15 (4.3e+14 - 4.04e+16)	7.49e+15 (7.11e+13 - 7.03e+16)	0.761[m]
Original Gray Level Co-occurrence Matrix Cluster Tendency	1.01e+16 (1.19e+15 - 5.18e+16)	1.32e+16 (1.73e+14 - 3.12e+16)	0.867[m]	Original Neighboring Gray Tone Difference Matrix Strength	1.22e+16 (0.56 - 3.88e+16)	3.605e+15 (0.39 - 2.58e+16)	0.098[m]
Original Gray Level Co-occurrence Matrix Contrast	4.66e+15 (5.18e+14 - 5.82e+16)	6.82e+15 (6.63e+14 - 6.31e+16)	0.452[m]	Original Gray Level Dependence Matrix Small Dependence Emphasis	0.38 (0.28 - 0.51)	0.43 (0.31 - 0.7)	0.009[m]
Original Gray Level Co-occurrence Matrix Correlation	4.20E-01 (1.00E-01)	3.66E-01 (9.88E-02)	0.177[f]	Original Gray Level Dependence Matrix Large Dependence Emphasis	9.04e+15 (7.9e+14 - 1.59e+16)	7.85e+15 (9.45e+13 - 6.11e+16)	0.387[m]
Original Gray Level Co-occurrence Matrix Difference Average	5.6e+15 (4.94e+14 - 4.78e+16)	5.675e+15 (5.14e+14 - 7.08e+16)	0.874[m]	Original Gray Level Dependence Matrix Gray Level Non Uniformity	7.88e+15 (3.47e+14 - 2.62e+16)	6.74e+15 (2.98e+14 - 5.63e+16)	0.919[m]
Original Gray Level Co-occurrence Matrix Difference Entropy	4.22e+15 (3.61e+15 - 3.91e+16)	4.37e+15 (3.62e+13 - 4.58e+16)	0.730[m]	Original Gray Level Dependence Matrix Dependence Non Uniformity	5.14e+15 (4.46e+14 - 3.27e+16)	8.06e+15 (5.57e+14 - 4.49e+16)	0.361[m]
Original Gray Level Co-occurrence Matrix Difference Variance	3.89e+15 (2.29e+14 - 3.95e+16)	2.245e+16 (2.19e+14 - 5.65e+16)	0.247[m]	Original Gray Level Dependence Matrix Dependence Non Uniformity Normalized	0.22 (0.16 - 0.3)	0.25 (0.16 - 0.47)	0.016[m]
Original Gray Level Co-occurrence Matrix Joint Energy	0 (0 - 0.01)	0 (0 - 0.01)	0.040[m]	Original Gray Level Dependence Matrix Gray Level Variance	4.56e+15 (4.53e+14 - 5.13e+16)	6.885e+15 (6.53e+14 - 6.3e+16)	0.817[m]
Original Gray Level Co-occurrence Matrix Joint Entropy	8.57e+15 (7.49e+15 - 7.79e+16)	8.83e+15 (8.11e+14 - 9.88e+15)	0.285[m]	Original Gray Level Dependence Matrix Dependence Variance	4.24e+15 (4.29e+14 - 3.73e+16)	1.33e+16 (0.6 - 4.27e+16)	0.375[m]
Original Gray Level Co-occurrence Matrix Informal Measure of Correlation 1	-0.06 (-0.08 - -0.03)	-0.06 (-0.21 - -0.02)	0.169[m]	Original Gray Level Dependence Matrix Dependence Entropy	6.81e+15 (6.49e+15 - 6.78e+16)	6.715e+15 (6.45e+14 - 7.25e+16)	0.528[m]
Original Gray Level Co-occurrence Matrix Informal Measure of Correlation 2	6.03E-01 (8.01E-02)	6.36E-01 (1.33E-01)	0.595[f]	Original Gray Level Dependence Matrix Low Gray Level Emphasis	0.02 (0 - 0.23)	0.01 (0 - 0.24)	0.157[m]
Original Gray Level Co-occurrence Matrix Inverse Difference Moment	2.23E-01 (3.85E-02)	1.90E-01 (4.05E-02)	0.048[f]	Original Gray Level Dependence Matrix High Gray Level Emphasis	1.18e+16 (1.33e+15 - 3.31e+16)	1.35e+16 (2.48e+14 - 4.81e+16)	0.203[m]
Original Gray Level Co-occurrence Matrix Maximal Correlation Coefficient	5.43E-01 (8.41E-02)	4.95E-01 (8.64E-02)	0.147[f]	Original Gray Level Dependence Matrix Small Dependence Low Gray Level Emphasis	0.01 (0 - 0.03)	0.01 (0 - 0.03)	0.219[m]
Original Gray Level Co-occurrence Matrix Inverse Difference Moment Normalized	0.99 (0.98 - 0.99)	0.99 (0.97 - 0.99)	0.015[m]	Original Gray Level Dependence Matrix Small Dependence High Gray Level Emphasis	9.17e+15 (9.08e+14 - 6.29e+16)	1.105e+16 (1.63e+14 - 4.34e+16)	0.782[m]
Original Gray Level Co-occurrence Matrix Inverse Difference	3.11E-01 (3.61E-02)	2.78E-01 (4.04E-02)	0.037[f]	Original Gray Level Dependence Matrix Large Dependence Low Gray Level Emphasis	0.15 (0.05 - 2.31e+16)	0.08 (0.01 - 1.58e+16)	0.236[m]
Original Gray Level Co-occurrence Matrix Inverse Difference Normalized	0.93 (0.91 - 0.95)	0.93 (0.89 - 0.94)	0.015[m]	Original Gray Level Dependence Matrix Large Dependence High Gray Level Emphasis	1.04e+16 (2.24e+15 - 5.03e+16)	1.185e+16 (2.31e+14 - 4.32e+16)	0.270[m]
Original Gray Level Co-occurrence Matrix Inverse Variance	2.25E-01 (3.96E-02)	1.94E-01 (4.05E-02)	0.068[f]				

[m]: Mann-Whitney U Test, [t]: T-Test for Equal Variance, *: T-Test for Unequal Variance, *: Mean (SD) for T-Test and Median (Min-Max) for Mann-Whitney U Test

4.2.4 Multiple Lojistik Regresyon Analizi

Multiple lojistik regresyon analizinde ALK rearranjmanı, EGFR mutasyon pozitifliği, wild tip tümöt, uzak metastaz ve mediatinal lenf nodu metastazı durum incelemesi yapılmış olup analize intratümöral, rim ve peritümöral parankimden elde olunan istatistiksel olarak anlamlı olan şekil, birinci derece, ikinci ve üçüncü derece texture parametreleridahil edildi. Ancak EGFR mutasyonu olan tümörlerde intratümöral istatistiksel olarak anlamlı parametre olmadığında analizde kullanılmadı. Analize dahil edilen parametrelerde öncelik p değeri 0.001'den küçük olanlar öncelik verilmiştir.

Tablo 23'de lojistik regresyon model analizi özetlenmiş olup güven aralığı üst ve alt sınırı, odds ratio, regresyon katsayısı, standart hata parametrelerine yer

verşilmiştir. Tabloda odds ratio değerine göre majör ve mimör parametreler saptanmıştır.

Backward Stepwise metodu kullanılarakyapılan lojistik regresyon ile oluşturulan modelin ALK rearranjmanını ayırım gücü %57,1 EGFR mutasyonunu% 76,9wild tip tümörleri%100 bulunmuştur. Mediastinal lenf nodu metastaz saptama olasılığı%96,9 bulunurken uzak metastaz olasılığını saptama oranı%97,1 olarak bulunmuştur. Major ve minör değişkenler Tablo 22 ‘ de özetlenmiştir.

Tablo 23: Multiple Lojistik regresyon Analizi

		B	Se.	P	Odss Ratio	95% Confidence Interval For Odss Ratio	
						Lower Bound	Upper Bound
ALK REARRANJMANI							
	IT Original First Order Standard Deviation	7,38E-18	2,37E-18	**0,003**	1,000	1,000	1,000
	IT Original Gray Level Dependence Matrix Small Dependence Emphasis	0,663	0,233	**0,007**	1,940	1,229	3,064
	PP Original Gray Level Run Length Matrix Long Run Emphasis	-2,26E-17	7,85E-18	**0,006**	1,000	1,000	1,000
	PP Original Gray Level Size Zone Matrix Small Area High Gray Level Emphasis	-9,64E-18	2,91E-18	**0,002**	1,000	1,000	1,000
	RIM Original Shape Spherical Disproportion	1,09E-17	2,75E-18	**<0.001**	1,000	1,000	1,000
Estimated Accuracy Rates: ALK REARRANGEMENT 0 (100%) ALK REARRANGEMENT 1 (57.1%) General (93.3%)							
UZAK METASTAZ							
	IT Original Gray Level Co occurrence Matrix Joint Average	5,52E-18	3,45E-18	0,118	1,000	1,000	1,000
	IT Original Gray Level Run Length Matrix High Gray Level Run Emphasis	-2,64E-17	6,85E-18	**<0.001**	1,000	1,000	1,000
	PP Original Gray Level Dependence Matrix Dependence Non Uniformity	-8,41E-18	3,87E-18	**0,036**	1,000	1,000	1,000
	RIM Original Gray Level Size Zone Matrix Gray Level Non Uniformity Normalized	38,142	3,843	**<0.001**	3,67E+16	1,97E+13	6,86E+19
	RIM Original Gray Level Dependence Matrix High Gray Level Emphasis	-7,01E-18	4,26E-18	0,108	1,000	1,000	1,000
Estimated Accuracy Rates: DISTANT METASTASIS 0 (70%) DISTANT METASTASIS 1 (97.1%) General (91.1%)							
EGFR MUTASYONU							
	(Intercept)	1,487	0,231	**<0.001**	4,424	2,811	6,964
	PP Original First Order Standard Deviation	-2,21E-17	7,88E-18	**0,008**	1,000	1,000	1,000
	PP Original Gray Level Dependence Matrix Low Gray Level Emphasis	-2,068	1,037	0,053	0,126	0,017	0,966
	RIM Original Shape Spherical Disproportion	-1,20E-17	3,64E-18	**0,002**	1,000	1,000	1,000
	RIM Original First Order Interquartile Range	-0,002	0,001	**0,001**	0,998	0,996	0,999
Estimated Accuracy Rates: EGFR MUTATION 0 (90.6%) EGFR MUTATION 1 (76.9%) General (86.7%)							
MEDIASTINAL LENFATİK METASTAZ							
	IT Original Shape Maximum 2D Diameter Column	8,31E-18	3,81E-18	**0,036**	1,000	1,000	1,000
	IT Original Gray Level Co occurrence Matrix Maximal Correlation Coefficient	0,776	0,400	0,060	2,172	0,992	4,758
	PP Original Shape Sphericity	-1,629	0,780	**0,044**	0,196	0,043	0,904
	PP Original Gray Level Co occurrence Matrix Inverse Difference Moment Normalized	-37,066	15,945	**0,026**	7,99E-17	2,14E-30	0,003
	PP Original Gray Level Run Length Matrix Short Run Emphasis	38,183	16,101	**0,023**	3,82E+16	753,598	1,94E+30
	PP Original Gray Level Size Zone Matrix Small Area	5,750	4,489	0,208	314,180	0,047	2,08E+06

	Emphasis						
	PP Original Gray Level Dependence Matrix Small Dependence Emphasis	-7,850	4,040	0,060	3,90E-04	1,42E-07	1,070
	RIM Original Shape Surface Area	7,56E-18	4,04E-18	0,070	1,000	1,000	1,000
	RIM Original First Order Root Mean Squared	-1,62E-17	6,81E-18	**0,023**	1,000	1,000	1,000
Estimated Accuracy Rates: MEDIASTINAL LYMPHATIC MET 0 (69.2%) MEDIASTINAL LYMPHATIC MET 1 (96.9%) General (88.9%)							
WILD TİP							
	IT Original Gray Level Co occurrence Matrix Cluster Prominence	1,49E-17	6,92E-18	**0,038**	1,000	1,000	1,000
	IT Original Neighboring Gray Tone Difference Matrix Contrast	4,71E-17	2,29E-17	**0,047**	1,000	1,000	1,000
	PP Original Shape Surface Area to Volume Ratio	-9,75E-16	3,42E-16	**0,007**	1,000	1,000	1,000
	PP Original Gray Level Co occurrence Matrix Correlation	0,943	0,468	0,052	2,567	1,026	6,424
	PP Original Gray Level Run Length Matrix Run Length Non Uniformity Normalized	-1,161	0,246	**<0.001**	0,313	0,193	0,508
	PP Original Neighboring Gray Tone Difference Matrix Coarseness	5,50E-12	2,41E-12	**0,029**	1,000	1,000	1,000
	RIM Original First Order Interquartile Range	0,003	0,001	**<0.001**	1,003	1,001	1,004
	RIM Original Gray Level Run Length Matrix High Gray Level Run Emphasis	7,85E-18	4,21E-18	0,071	1,000	1,000	1,000
	RIM Original Gray Level Size Zone Matrix Gray Level Variance	1,80E-17	1,05E-17	0,096	1,000	1,000	1,000
	RIM Original Neighboring Gray Tone Difference Matrix Busyness	2,07E-17	1,16E-17	0,082	1,000	1,000	1,000
Estimated Accuracy Rates: WILD 0 (95%) WILD 1 (100%) General (97.8%)							
Multiple Logistic Regression (Method = Backward Stepwise (Wald)), B: Regression Coefficients, Se: Standard Error							
IT: Intratümöral PP: Peritümöral Parankim							

5. TARTIŞMA

KHDAK'de tedavi yöntemi evre, histolojik analiz, genetik farklılıklar ve hasta durumuna göre seçilmektedir. Tedavi seçenekleri cerrahi, radyoterapi, kemoterapi,immünoterapi ve moleküler hedefe yönelik tedaviler olup tek ya da kombine olarak kullanılmaktadır [70]. Cerrehi rezeksiyon erken evre hastalıkta önerilmekteyken adjuvan platin temelli kemoterapi tedavisiyle 5 yıllık ölüm riskinde %5 azalmayı sağlamıştır. Ancak bu tedavi yönteminin dezavantajları ise yüksek relaps oranlarıyla beraber yüksek toksisitedir [68]. Cerrahiye uygun olmayan hastalarda tercih edilen tedavi yöntemi kemoterapi ve devamında immünoterapidir [69].

Hedefe yönelik tedavi önemli klinik sonuçlarıyla beraber KHDAK tedavisinde önemli bir yere sahiptir. Moleküler testler genetik değişiklikleri tanımlamak için kullanılmakla beraber tedavide kullanılan tirozin kinaz inhibitörlerinin (TKI)hedef mutasyonları olan EGFR, ALK, ROS1, RET, BRAF, MET ve NTRK' yı içermektedir. Moleküler testler tanı anında uygulanmaktadır. Tanımlanan genetik değişiklikler saptanmadığında ise PD-L1 expresyonunun araştırılması teavide yol göstericiolabilir[70].

Hedef mutasyonlar sayıca fazla olup her birinin klinik bulguları ve tedavi seçenekleri faklı olmakla beraber çalışmamızın bu bölümünde, çalışmanın hedef mutasyonları olan EGFR mutasyonu ve ALK gen rearranjmanı hakkında bilgilere yer verilmiştir.

EGFR mutasyonu KHDAK'lerinde özellikle adenokarsinom subtipinde görülmektedir. EGFR mutasyonu kadın hastalarda ve sigara öyküsü olmayanlarda daha sık saptanmaktadır. Bununla beraber coğrafik dağılımı farklılık göstermekte olup Asya popülasyonundasık saptanmaktadır [83]. EGFR mutasyonu saptanan metastatik hastalıkta ön sırada, EGFR TKI osimertinib tedavisi kullanılmaktadır. Bununla beraber vasküler endotelyal büyüme faktörü (VEGF) inhibitörü olan

ramucirumab ile birinci jenerasyon TKI olan erlotinib kombinasyonu tedavide diğer bir seçeneği oluşturmaktadır [84, 85].

ALK gen rearranjmanı ise EGFR mutasyonuna göre KHDAK'lerinde daha az sıklıkla saptanmaktadır. ALK rearranjmanı saptanan lezyonlarda ALK TKI olan crizotinib ve brigatinib hastalara umut verici hedefe yönelik tedavi seçenekleri sunmaktadır [86, 87].

EGFR mutasyonu klinik bulgulardaki ve tedavi seçeneklerindeki farklı seçenekler sunmasının yanısıra BT görüntülemede de farklı bulgularla karşımıza çıkabilmektedir. EGFR mutasyonu küçük tümör boyutu, köpüksü görünüm, homojen kontrastlanma, plevral retraksiyon, bronkovasküler dallanmada kalınlaşma ile ilişkilendirilmiştir [88]. Bu bulgulara ek olarak lezyonda buzlu cam dansitesi bulunması, vasküler konverjansın eşlik etmesi, spiküle kontur, hava bronkogramı içermesi EGFR mutasyonu ile yakın ilişkili olduğu saptanmıştır. Radyolojik bulgulardan kavitasyonun ise EGFR mutasyon tahmininde koruyucu faktör olduğu belirtilmiştir [89].

Primer tümörde hava bronkogramının olmaması, akciğer ve beyin metastazı yapmaması, lenfanjitik karsinomatozanın ve plevral metastazların, sklerotik kemik metastazlarnın bulunması ve uzak lenf nodu metastazlarının eşlik etmesi ALK gen rearanjmanı olan KHDAK'lerin, EGFR mutasyonu olanlardan ayırt etmede önemli bulgulardır [90].

Akciğer kanseri dünya çapında kansere bağlı ölümlerin önde gelen nedeni olduğundan erken potansiyel olarak tedavi edilebilir bir aşamada, tanıdaki gelişmeler insan sağlığı üzerine büyük bir etkiye sahip olacaktır[91].Akciğer kanseri tanı ve tedavisindeki gelişmeler onkoloji alanında daimî güncelliğini devam ettirmekte ve son yollarda önemi daha da artan radiomic çalışmalarında vazgeçilmez konusu olmuştur. Radiomic özellikler tümörün ya da normal dokunun şeklini boyutunu hacmini ve dokusunu nicel olarak değerlendiren görüntü tabanlı tanımlayıcılardır. Radiomic özellikler yapay zeka uygulamalarıyla tahmine dayalı prognostik modellerle birlikte kullanılmaktadır [92].

Akciğer kanseri, tanıda, subtip belirlemede, prognoz ve sağ kalım tahmini, uzak metastaz tahmini, genetik mutasyon tayini gibi amaçlarla radiomics çalışmalarının ilgi çeken konusu olmuştur.

Çalışmamızda intratümöral, rim ve peritümöral alandan elde olunana texture analiz verilerinin ALK rearranjmanı, EGFR mutastonu saptanan ve mutasyon saptanmayan tümörler ile uzak metastaz ve mediastinal lenf nodu metastazını tahmin etme gücünü araştırdık. EGFR mutasyonu olan tümörlerde intratümöral TA verileri dışında diğer gruplarda istatistiksel olarak anlamlı veriler mevcuttu ve bu veriler göz önünde bulundurularak multiple lojistik regresyon analizi ile oluşturulan modelin tahmin doğruluğu ALK rearranjmanını %57,1 EGFR mutasyonunu %76,9 wild tip tümörleri %100 uzak metastazı %97,1 mediastinal lenf nodu metastazını ise %96,9 olarak saptandı.

Literatürde çalışmamız ile aynı amacı olan sınırlı sayıda yayın mevcuttur. Agazzi ve ark. 84 hasta ile ALK rearranjmanı ve EGFR mutasyonunu saptamada TA verilerilerni değerlendirdiği çalışmada;intratümöral TA verilerinin mutasyonel durumu ön görmede faydalı olabileceğini göstermiştir. SMOTE (Syntetic Minority Over-sampling Technique) yöntemi ile sentetik veri oluşturarak ve çoklu filtrasyon yöntemi sonrası gerçekleştirdikleri analizdeTA parametrelerinden **Skewness**'in mutasyonel durumu ön görmede en değerlerli parametre olduğunu vurgulamışlardır. **Skewness** değeri EGFR mutasyonu olan lezyonlarda en yüksek sonrasında ALK rearranjmanı ve en düşük ise wild tip tümörlerde saptamışlardır[93]. Çalışmamızda ise intratümöral TA verilerinde **Skewness**değeri istatistikselolarak anlamlı değildi ancak her üç grup karşılaştırıldığında ise Agazzi ve ark. yaptığı çalışmaya benzer dağılımı mevcuttu. Bu durum daha az sayıda hasta kullanmamıza ve SMOTE yöntemi ile sentetik veri oluşturmamamızdan kaynaklıdır.

Literatürde mevcut diğer bir çalışma ise 93 hasta ile EGFR mutasyon tahmini için TA verilerini karşılaştırmıştır [94]. Çalışmada radiomics verilerinden **Kurtosis** değeri EGFR mutasyonu olan ve olmayan lezyonlarda önemli ölçüde farklılık göstermiştir. Bizim çalışmamız ile yöntem ve segmentasyon farklılıkları olması nedeniyle karşılaştırılması güç olsada intratümöral TA verilerinde **Kurtosis** parametresinde istatistiksel farklılık saptamadık ancak hem ALK gen rearranjmanı

hem de EGFR mutasyonu saptanan lezyonların yakın peritümöral parankimden yapılan TA değerlendirmesinde **Kurtosis** parametresinde istatistiksel olarak anlamlı farklılık saptanmıştır. EGFR mutasyonu olan lezyonlarda ALK rearranjmanı olan lezyonlardan daha düşük olup wild tip tümör ayırımında umut vadeden bir parametredir.

Akciğer kanserinde çalışmalarında son yıllarda önem kazanan bir diğer konu ise peritümöral parankimdir. Peritümöral parankim kan damarları lenfatikler ve hava yolu ileepitelyal-mezenkimal transisyonla,tümör ilişkili makrofajlar aracılığıyla ilemikroinvazyona maruz kalabileceği gösterilmiştir [23, 95, 96].Bu durum aslında akciğer kanserini peritümöral parankim ile değerlendirmenin şart olduğunu göstermektedir

Histolojik- patolojik alanda gerçekleşen bu güncelleme radiomics çalışmalarınında ilgi alanına girmiştir. Choe ve ark. intratümöral ve peritümöral alanın segmentasyonu ile yapıtığı çalışmada ALK gen rearranjmanı ve EGFR mutasyon durumu değerlendirilmiştir[97].Çalışmamız ile bazı majör faklılıkları bulunmaktadır; peritümöral alanı tek segmentasyon ile geçekleştirmişlerdir, bizim çalışmamışzda iki faklı peritümöral alan mevcuttur. Değerlendirme yapılırken ise intratümöral TA verileri ve kombine intra-peri tümöral alan olarak yapılmış olup bizim çalışmamızda ise her segmentasyon parametrelerinin ayrı ayrı değerlendirilip multiple lojistik regresyon analizi 3 grup birlikte yapılmıştır. Peritümöral olarak adlandırlan segmentasyon çalışmamızda rim segmentasyonuna karşılk gelmektedir.İntratumoral TA verilerinden **GLCM Inverse Variance** ve **GLSZM Zone Percentage** parametreleri her iki çalışmada ALK rearranjmanı için anlamlı bulunmuştur.Peritümöral alan analizinde saptanan **GLSZM Gray Level Variance** parametresi çalışmamızda istatistiksel olarak anlamlı değildir, bununla beraber rim alanından elde olunan birinci ve ikinci derece TA parametrelerinden anlamlı olanlarlar mevcuttu. **GLSZM Small Area Low Gray Level Emphasis**parametresi bizim çalışmamızda rim alanı ve Choe ve ark. çalışmasında peritümöral alandan elde edilen analizde istatistiksel olarak anlamlıydı. Yine çalışmamızda rim alanı değerlendirmesinde birinci ikinci ve yüksek derece parametrelerden anlamlı olanlar mevcuttu. Bizim çalışmamızın ana farklılığı ise uzak peritümöral alanın da

değerlendirilmesiydi. Ayrıca çalışmada wild tip tümörlerin TA parameterelri değerlendirilmesi yapılmamış olup karşılaştırılamadı. Çalışma intratümöral TA verileri ve peritümöral alan verilerilerinin kombinasyonun tanısal değeri artıracağını vurgulamaktadır. Bizim çalışmamızda ise EGFR mutasyonu olan lezyonlarda intratümöral istatistiksel olarak anlamlı parametre saptanmazken rim ve peritümöral alanda anlamlı parametreler saptadık ve peritümöral alan değerlendirmesi aslında intratümöral TA değerlendirilmesi kadar önemli olmaktadır.

Yamazaki ve ark. yaptığı çalışmada ise EGFR mutasyonunu intra ve peritümöral alanı değerlendirerek yapmıştır[98]. Peritümöral alan bizim çalışmamızda rim alanına denk gelmektedir. Her iki çalışmada **Maximum** ve **Energy**parametreleri istatistiksel olarak anlamlı olup iki çalışmada da birbirinden farklı ikinci ve yüksek derece parametrelerden anlamlı olanlar saptanmıştır.

Radiomics çalışmaları akciğer kanserinde prognostik faktörler olan mediastinal lenf nodu ve uzak metastaz tahmininde de kullanılmıştır.Gu ve ark. yaptığı çalışmada intratümöral TA verileri ve karsinoembriyojenik antijen değerleri klinik bulgularla beraber değerlendrilmiştir[99].**Mean** parametresi bizim çalışmamızda da lenf nodu metastazı ön görmede istatistiksel olarak anlamlıydı ayrıca her iki çalışmada da intratümöral TA parametrelerinde anlamlı olan ama ortak olmayan parametreler mevcuttur.

Radiomics çalışmaları nükleer tıp alanını ilgisini de çekmiş olup Zheng ve ark. intratümöral TA verilerini PET/BT görüntülerinden elde ederek mediastinal lenf nodu metastazı saptamada radiomics çalışması yapmıştır [100]. Çalışmada intratümöral TA değerleri ile uygulanan model lenf nodu evrelemesi için umut vadedicidir.

Dou ve ark. yaptığı çalışmada ise intratumoral rim ve peritumoral parankimden elde olunan TA parametreleri klinik bulgularla birlikte değerlendirilerek uzak metastaz saptamada TA değerlerinin kullanılabilirliği değerlendirilmiştir [101].Her iki çalışmada rim alanından elde olunan **90th Percentile** ve Peritümöral alandan elde olunan **Robust Mean Absolute Deviation** parametreleri ortak istatististiksel anlamlı değerler olup her iki çalışmada da

intartümöral rim ve peritümöral alanda uzak metastazı için prognostik değere sahip farklı TA parametreleri mevcuttur. Çalışmada rim alanından elde olunan TA değerlerinin intatümöral TA değerlerine göre uzak metastazı saptamada daha değerli olduğu vurgulanmış olup bizim çalışmamızda multiple lojistik regresyon analizinde uzak metastaz için majör değişken de rim alanındaydı.

Literatürde farklı metotlar denenerek farklı modeller oluşturulmuş yayınlar mevcut olup çalışmamız ALK gen rearranjmanını, EGFR mutasyonunu ve wild tip tümörleri ayrıca mediastinal lenf nodu metastaz durumunu üç farklısegmentasyondan (intratümöral, rim ve peritümöral) elde edilen TA parametreleriyle değerlendirilen ilk çalışmadır. Uzak metastazı ise üç farklı segmentasyonla değerlendiren nadir yayınlardandır. Çalışmamızın en güçlü yönü literatüre peritümöral alan ile ilgili yeni veriler sunmasıdır.

Çalışmamız retrospektif bir çalışma olup çalışmanın zayıf yönleri arasında sayılabilir. Yine hasta sayımızın az olmasıyla birlikte SMOTE yöntemi kullanılmaması çalışmanın en büyük limitasyonudur.

6.SONUÇ

Texture analizi radiomics çalışmalarından en sık kullanılanıdır. Noninvaziv ve tekrarlanabilir olması sebebiyle güncelliğini korumaktadır. Texture analiz çalışmaları akciğer kanserindeki gelişmelerle farklı alanlarda kullanılmaktadır.

Tedavi seçiminde radiomics çalışmaları gen tayininde kullanılırken önemli prognostik belirteçlerin tahmininde de gündeme gelmiştir. Biz çalışmamızda EGFR mutasyonu,ALK rearranjmanı olan ve mutasyon saptanmayan tümörlerde ve aynı zamanda uzak metastazı ve mediastinal lenf nodu metastazı olan lezyonlarda intratümöral ve iki ayrı tümör çevresinden elde olunan texture analiz verilerini değerlendirdik. Çalışmamız genetik değişiklikleri ve mediastinal lenf nodu mutasyonunu üç farklısegmentasyonla değerlendiren ilk çalışma olup uzak metastazı ise benzer yöntemle değerlendiren sayılı yayınlar arasındadır.Her üç segmentasyondan elde olunan veriler birlikte değerlendirildiğinde texture analiz parametrelerinin mutasyon bilgisi ve prognostik bilgileri ön görmede yüksek tanısal değeri olduğunu saptadık.

Akciğer kanseri ile ilgili yapılan radiomics çalışmalarında sadece intratümöral değil peritümöral alanında tanısal değeri olduğunu vurgulamaktayız ve daha geniş hasta serileriyle literatür bilgisinin artırılmasına ihtiyaç vardır.

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9.EKLER

EK-1 Etik Kurul Karar Formu

T.C.

SBÜ Dr. Abdurrahman Yurtaslan Ankara Onkoloji SUAM

Girişimsel Olmayan Klinik Araştırmalar

Etik Kurulu

Sayın Nazan ÇİLEDAĞ

Araştırmacı grubu Prof. Dr. Nazan ÇİLEDAĞ, Dr. Abidin Emre KILIÇ ve Doç. Dr. Burcu SAVRAN' dan oluşan **"ALK Rearanjmanı Ve EGFR Mutasyonu Olan Akciğer Adenokarsinomlarında İntratümoral Ve Peritümoral Kontrastlı BT Temelli Texture Analiz Verilerinin Tanısal Değeri"** başlıklı araştırma öneriniz kurulumuzun 26/05/2022 tarihli toplantısında görüşülmüş olup,

Çalışmanızın, yapılması planlanan yerlerden izin alınması koşuluyla yapılmasında etik açıdan bir sakınca bulunmadığına oybirliği ile karar verilmiş ve karara ilişkin imza listesi ekte gönderilmiştir.

Bilgilerinizi rica ederim.

Prof. Dr. Özkan ÜNAL

Araştırma Kod No: 2022-05/110

Ek:1 Liste

SBÜ Dr. Abdurrahman Yurtaslan Ankara Onkoloji SUAM Girişimsel Olmayan Klinik AraştırmalarEtik Kurulu Katılım Listesi

TOPLANTI TARİHİ: 26.05.2022	DOSYA NUMARASI: 2022-05/110
ADI-SOYADI	İMZA
Prof. Dr. Özkan ÜNAL	
Prof. Dr. Mehmet Derya ONUK	
Doç. Dr. Hayriye Dilek HAMURCU	
Doç. Dr. İsmail Burak ATALAY	
Doç. Dr. Taha BAHSİ	
Doç. Dr. Caner KILIÇ	
Uzm. Dr. Gülsüm ÖZTÜRK EMİRAL	
Uzm. Dr. Yasemin GÜZLE ADAŞ	
Uzm. Dr. Dicle İSKENDER	
Dr. Ercan KURNAZ	
Av. Mahmut DALOĞLU	
Nuray ÇALIKUŞU	

10.ÖZGEÇMİŞ

I- Bireysel Bilgiler

Adı-Soyadı : Abidin Emre Kılıç

Doğum yeri ve tarihi :

Uyruğu : TC

Medeni durumu : Bekar

Askerlik durumu : Yapıldı

İletişim adresi ve telefonu :
Yenimahalle/ ANKARA

Yabancı dili : İngilizce

II- Eğitimi

SBÜ Dr. Abdurrahman Yurtaslan Onkoloji SUAM 2017-Halen

Gazi Üniversitesi Tıp Fakültesi 2009-2015

Haydar Öztaş Anadolu Lisesi 2004-2008

III- Ünvanları

Tıp Doktoru- 2015

IV- Mesleki Deneyimi

SBÜ Dr. Abdurrahman Yurtaslan Onkoloji SUAM 2017- halen, asistan hekim olarak çalışmaktadır.

V- Üye Olduğu Bilimsel Kuruluşlar

Türk Radyoloji Derneği

Türk Manyetik Rezonans Derneği

VI- Bilimsel İlgi Alanları

- Abidin Emre Kılıç, Nazan Çiledağ, Burcu Savran, Muhammed Fatih Göç, Pınar Özdemir Akdur. İnsidental Saptanan Nadir Bir Varyasyon: Pedinküllü Aksesuar Karaciğer Lobu. Türk Manyetik Rezonans Derneği 26. Yıllık Bilimsel Toplantısı
- Abidin Emre Kılıç, Özkan Ünal, Muhammed Fatih Göç. Transkallozal Rezeksiyon Sonrası Nüks Kolloid Kist Görüntüleme Bulguları. Türk Manyetik Rezonans Derneği 26. Yıllık Bilimsel Toplantısı
- Abidin Emre Kılıç, Nazan Çiledağ, Muhammed Fatih Göç, Büşra Bolat. Metastatik GİST Tedavi Yanıtında Difüzyon MRG ve ADC: Olgu Sunumu. Türk Manyetik Rezonans Derneği 25. Yıllık Uluslararası Katılımlı Bilimsel Toplantısı
- Abidin Emre Kılıç, Özkan Ünal, Muhammed Fatih Göç. Geç Başlangıçlı Pantotenat Kinaz İlişkili Nörodejenerasyon. Türk Manyetik Rezonans Derneği 25. Yıllık Uluslararası Katılımlı Bilimsel Toplantısı
- Abidin Emre Kılıç, Muhammed Fatih Göç, Nazan Çiledağ, Burcu Savran. İntrapankreatik Aksesuar Dalak: Olgu Sunumu. 42. Ulusal Radyoloji Kongresi (TÜRKRAD 2021)
- Abidin Emre Kılıç, Özkan Ünal, Muhammed Fatih Göç. Apseyi Taklit Eden Serebral Adenokarsinom Metastazı. 42. Ulusal Radyoloji Kongresi (TÜRKRAD 2021)
- Abidin Emre Kılıç, Muhammed Fatih Göç, Nazan Çiledağ. Erişkin Hastada İnsidental Saptanan İntralober Pulmoner Sekestrasyon: Olgu Sunumu. 43. Ulusal Radyoloji Kongresi (TÜRKRAD 2022)
- Muhammed Fatih Göç, Nazan Çiledağ, Burcu Savran, Abidin Emre Kılıç. Vertebral Intramedullary Air; Can It Be Related To Anti-Angiogenic Drugs Or Malignity. ARRS 2021

- Muhammed Fatih Göç, Özkan Ünal, Abidin Emre Kılıç, Meryem Elif Özbudak. Rüptüre Dermoid Kist İle Karışan İntrakranial Lipom: 2 olgu Sunumu.Türk Manyetik Rezonans Derneği 26. Yıllık Bilimsel Toplantısı
- Pınar Özdemir Akdur, Burcu Savran, Nazan Çiledağ, Abidin Emre Kılıç. Proksimal Tibiofibular Sinostozis-Tibia İle Fibulanın Aşkı.Türk Manyetik Rezonans Derneği 26. Yıllık Bilimsel Toplantısı
- Muhammed Fatih Göç, Özkan Ünal, Abidin Emre Kılıç. Diffuse Melanocytomatosis: Confunding For Leptomeningeal Carcinomatosis In a Patient With Breast Cancer.Türk Manyetik Rezonans Derneği 25. Yıllık Uluslararası Katılımlı Bilimsel Toplantısı
- Muhammed Fatih Göç, Ahmet Bayrak, Çetin İmamoğlu, Abidin Emre Kılıç. Perkütan Tru-Cut Göz Biyopsisi İle Doğrulanmış Orbital Plazmoblastik Lenfoma: Olgu sunumu. 42. Ulusal Radyoloji Kongresi (TÜRKRAD 2021)
-

VII- Bilimsel Etkinlikleri

2017-2022 SBÜ Dr. Abdurrahman Yurtaslan Onkoloji SUAM Radyoloji Kliniği Bölüm İçi Eğitimler
2017-2022 TRD Ankara Şubesi Eğitim Toplantıları
2019 Yılı TMRD 24. Yıllık Uluslararası Katılımlı Bilimsel Toplantısı
2022 Yılı TMRD 26. Yıllık Bilimsel Toplantısı
2019 Yılı TÜRKRAD Uluslararası Katılımlı Radyoloji Kongresi
2021 Yılı TÜRKRAD Radyoloji Kongresi