DİYABETİK AYAKDA AI-RÖNTGEN VE MR

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SBÜ Gülhane Eğitim ve Araştırma Hastanesi

Radyoloji Kliniği

3 Nisan 2026

OSTEOMYELİT (OM)

RÖNTGEN

- Kırmızı ayak
- Probe to bone test (PBT)*
- Sedimantasyon ve CRP*

*Butalia S, et al. Does this patient with diabetes have osteomyelitis of the lower extremity? JAMA. 2008;299(7):806

PPT ve Röntgen + ise OM tanısal duyarlılık %97, özgüllük %93

*Aragón-Sánchez J, Lipsky BA, Lázaro-Martínez JL. Diagnosing diabetic foot osteomyelitis: is the combination of probeto- bone test and plain radiography sufficient for high-risk inpatients? Diabet Med. 2011;28(2):191–4.

- Ülser+
- PBT +
- Sedim > 70

APPLIED SCIENCES (AUG 2025)

Using Artificial Intelligence for Detecting Diabetic Foot Osteomyelitis: Validation of Deep Learning Model for Plain Radiograph Interpretation

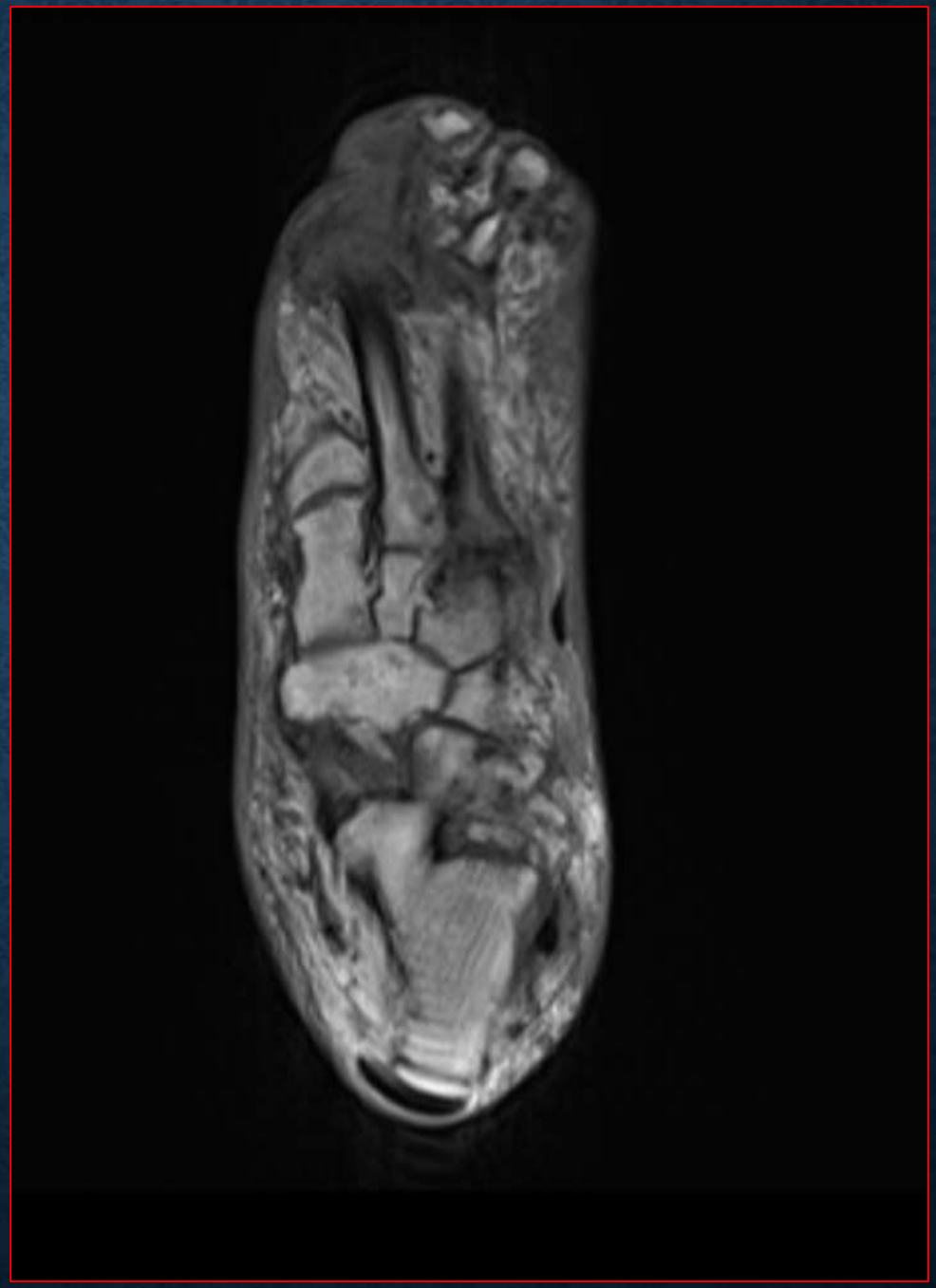
Francisco Javier Álvaro-Afonso, Aroa Tardáguila-García, Mateo López-Moral, Irene Sanz-Corbalán, Esther García-Morales, José Luis Lázaro-Martínez

DOI
https://doi.org/10.3390/app15158583

DL %92,8 duyarlılık - %4,4 özgüllük

Klinisyen %90,2 duyarlılık - %37,8 özgüllük

- OM lokasyonu ve yayılım
- Septik artrit
- Tenosinovit
- Apse
- Devitalize doku



T2 HİPERİNTENSİTE

- Duyarlılık % 95
- Özgüllük %80-95*

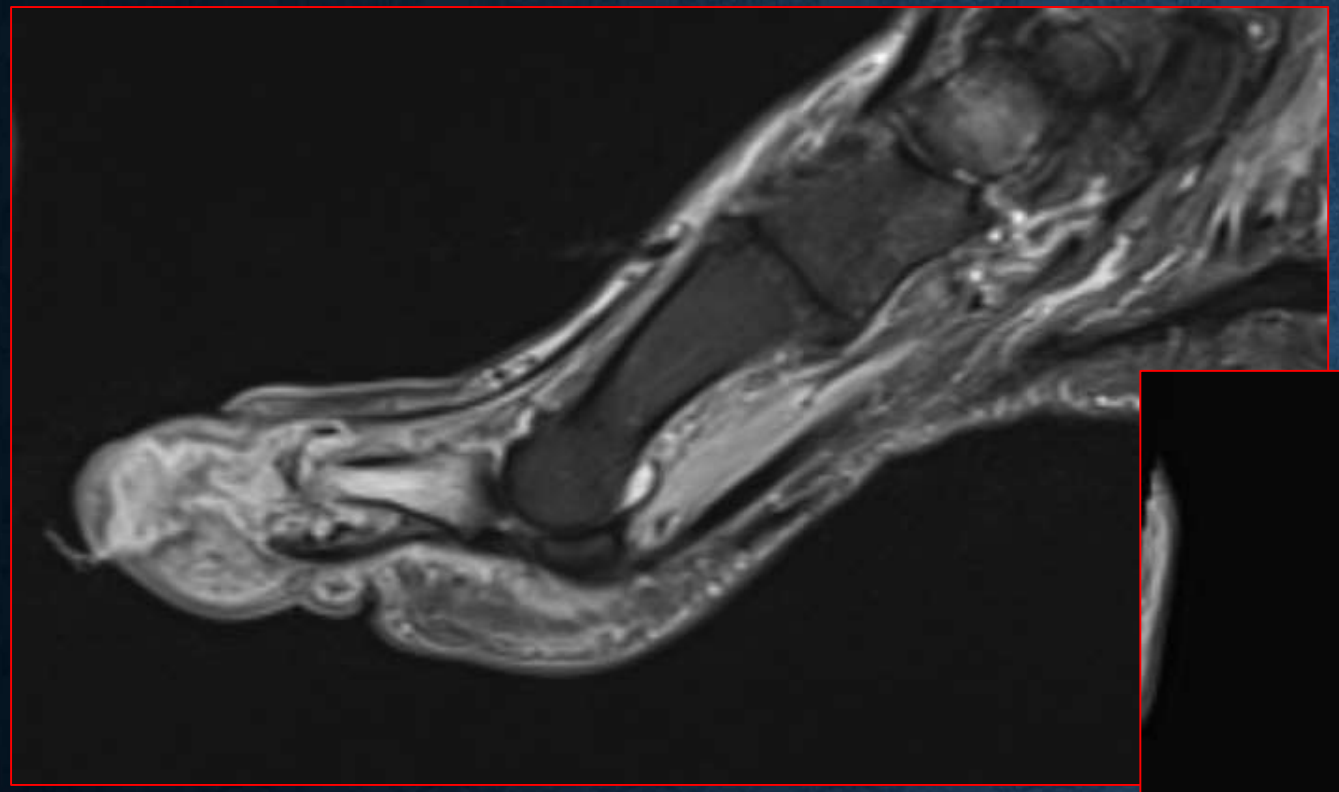
Alok Kapoor, et al. (2007) MRI for Diagnosing Foot Osteomyelitis. A Meta-analysis, JAMA I. M.

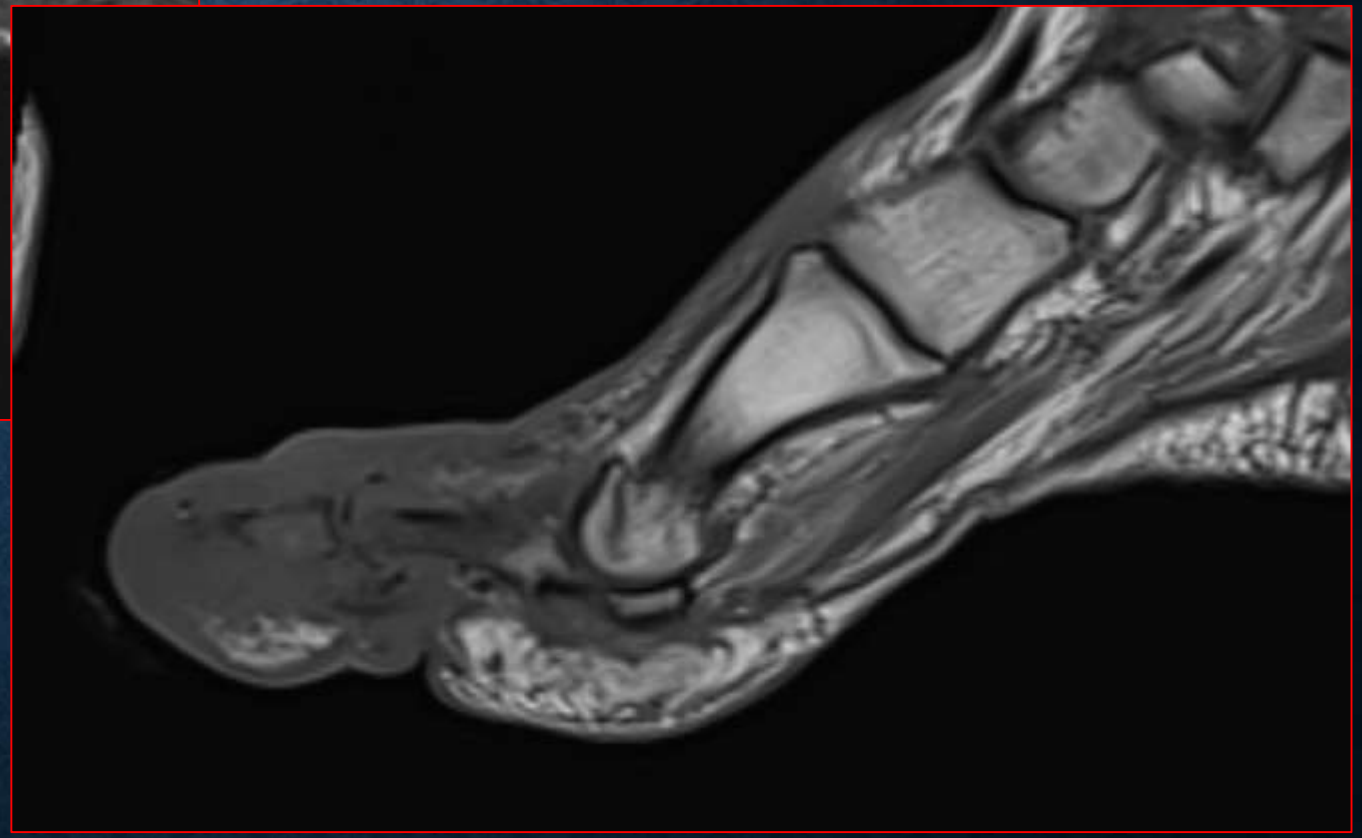
Negatif prediktif değer %98, pozitif prediktif değeri %79*.

*Collins MS, et al.T1-weighted MRI characteristics of pedal osteomyelitis. AJR Am J Roentgenol 2005;185:386-93.

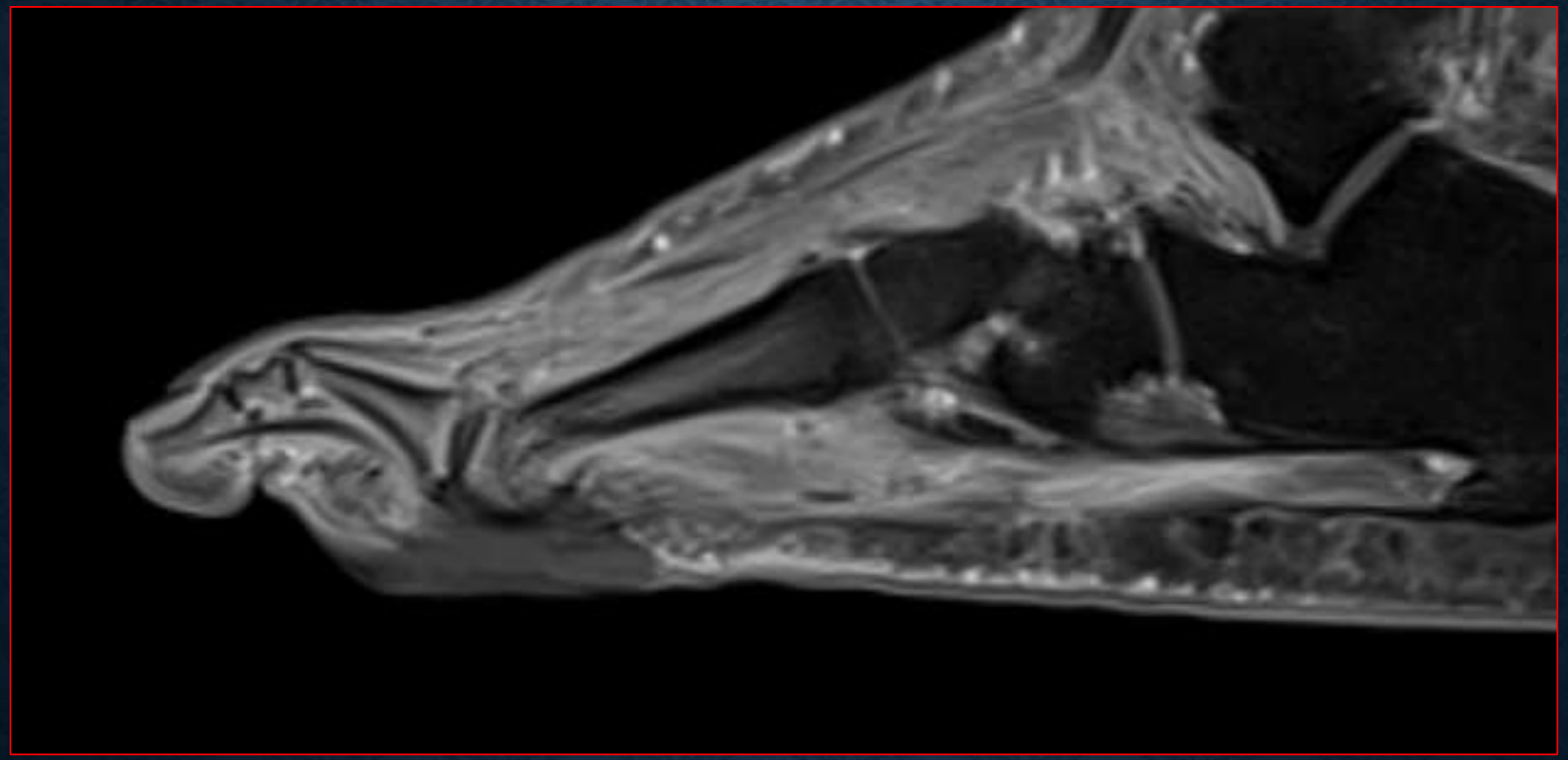
T1 HİPOİNTENSİTE

Sax AJ, et al.Predicting osteomyelitis in patients whose initial MRI demonstrated bone marrow edema without corresponding T1 signal marrow replacement. Skeletal Radiol 2020;49:1239-47

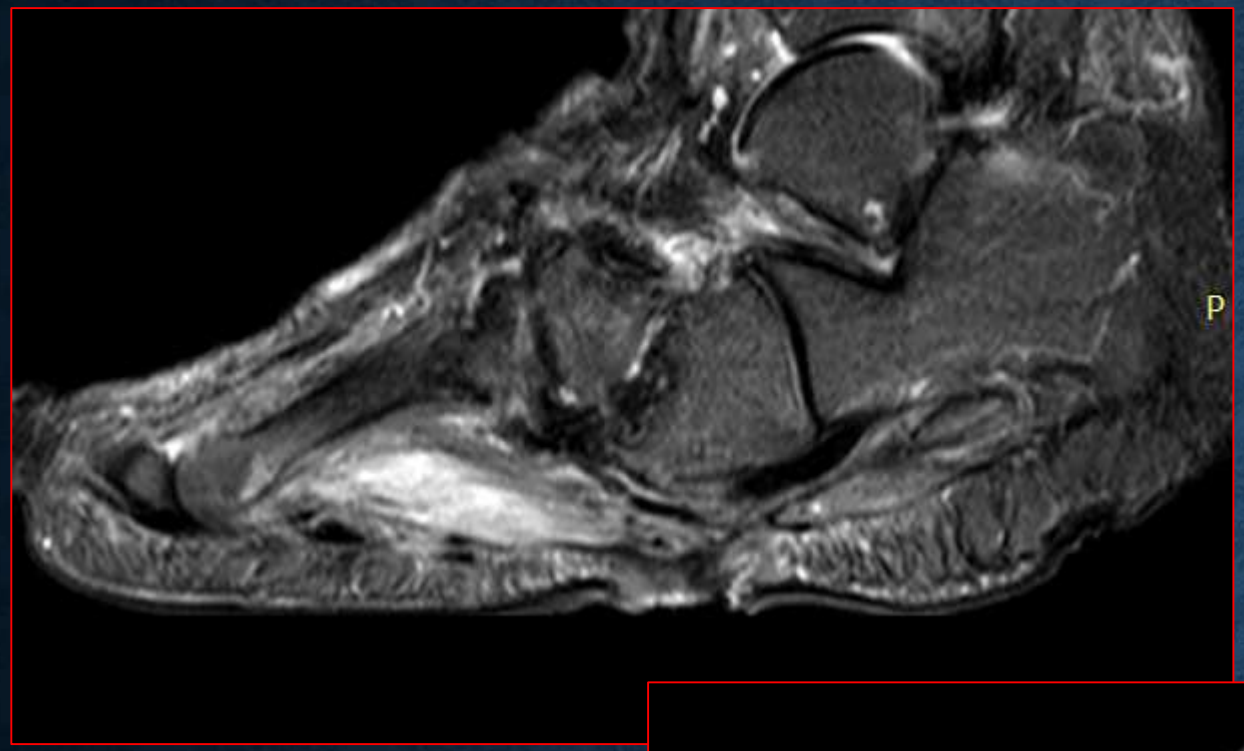




T1+KONTRAST



Ledermann HP, et al. Nonenhancing tissue on MR imaging of pedal infection: characterization of necrotic tissue and associated limitations for diagnosis of osteomyelitis and abscess. AJR Am J Roentgenol 2002;178:215-22.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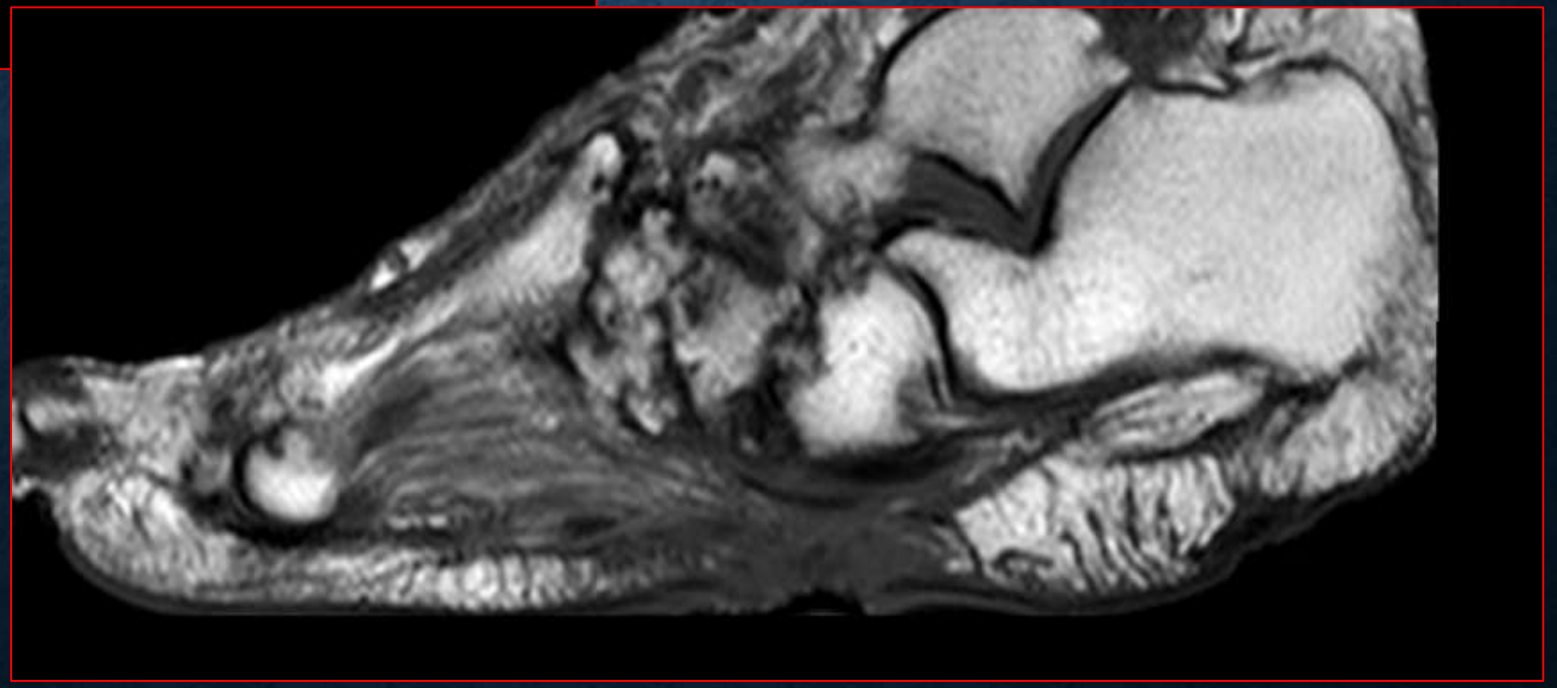


CNO+OM

CNO ile OM+CNO ayırımında;

- [18F] FDG duyarlılık ve özgüllüğü %100 ve %93,8*
- MRG duyarlılık ve özgüllüğü %76,9 ve %75

*Basu S, Chryssikos T, Houseni M, et al. Potential role of FDG PET in the setting of diabetic neuro-osteoarthropathy: Can it differentiate uncomplicated Charcot's neuroarthropathy from osteomyelitis and soft-tissue infection? Nucl Med Commun. 2007;28(6):465–72.

MR KISITLILIK

- Kontrast madde
- İnceleme süresi
- Hareket artefaktları
- Çekim protokol farklılıkları
- İleri MR görüntüleme teknikleri(perfüzyon MRG, DCE, DWI)
- Protez materyaller (duyarlılık %38-55, özgüllük %81-93%)*

*Park BN, Hong SJ, et al. MRI diagnosis for posttraumatic osteomyelitis of extremities using conventional metalartifact reducing protocols: revisited. Acad Radiol 2019;26: e317-23.

AI

- Çekim süresi
- Kontrast -
- Düşük maliyet
- İkincil bulgular -
- Yorum ve tecrübe –
- Hızlı sonuç

MR-ML

Radiomics method in the differential diagnosis of diabetic foot osteomyelitis and charcot neuroarthropathy

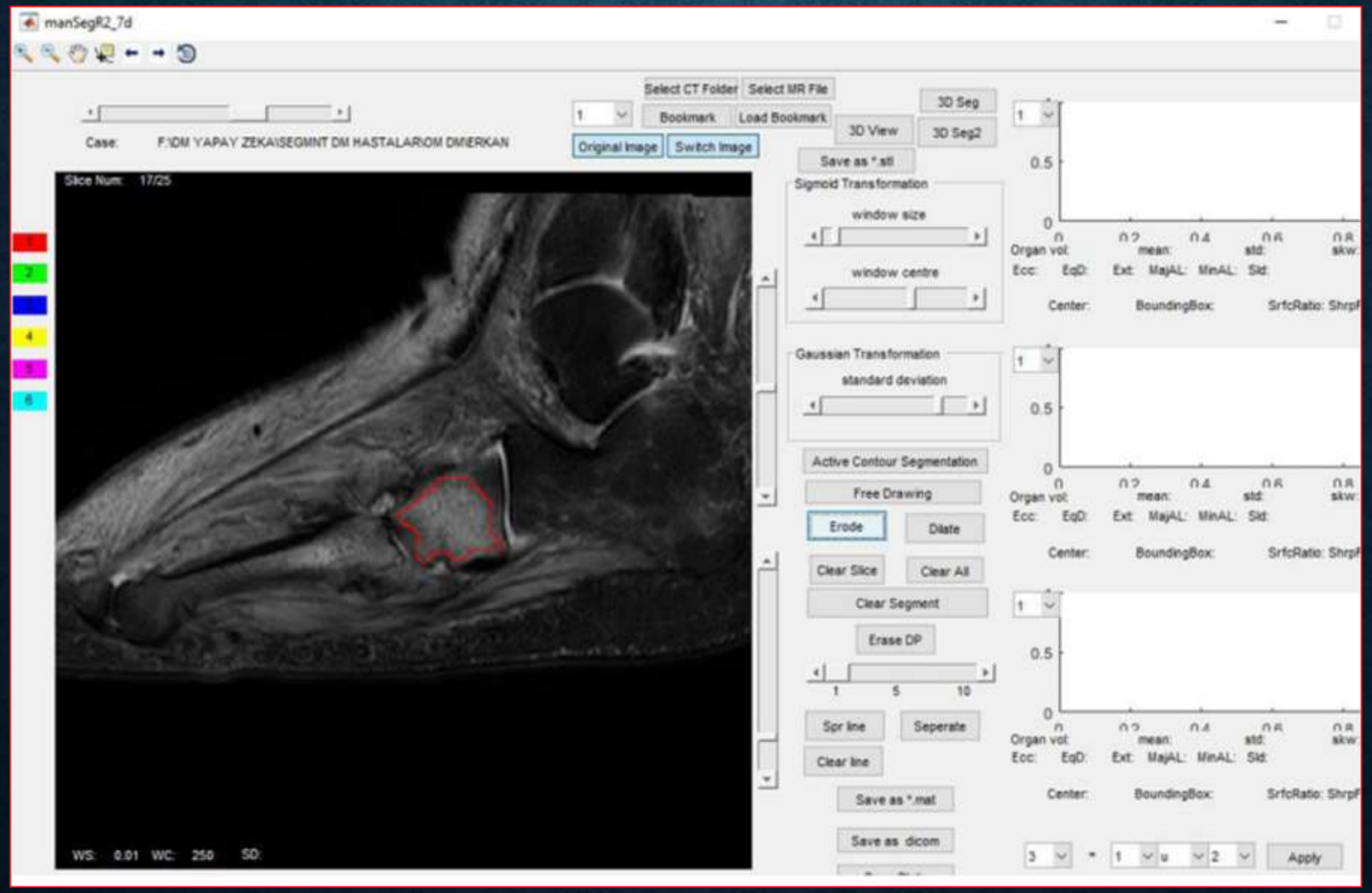
Ferhat Cuce [1], Gökalp Tulum [2], Kerim Bora Yılmaz [3], Onur Osman [2], Ayse Aralasmak [4]

Affiliations

PMID: 37102777 PMCID: PMC10392653 DOI: 10.1259/bjr.20220758

Makine öğrenme OM tanısında T1A duyarlılığı % 89, T2A özgüllük %89

BONE MARROW SIGNAL INTENSITY(BMSI)



MR-DL

J Imaging Inform Med. 2024 Oct;37(5):2454-2465. doi: 10.1007/s10278-024-01067-0.
Epub 2024 Mar 15.

Differential Diagnosis of Diabetic Foot Osteomyelitis and Charcot Neuropathic Osteoarthropathy with Deep Learning Methods

Maide Cakir [1], Gökalp Tulum [2], Ferhat Cuce [3], Kerim Bora Yilmaz [4], Ayse Aralasmak [5], Muhammet İkbal Isik [6], Hüseyin Canbolat [7]

Derin öğrenmene EfficientNet-b0 ile T1A duyarlılğı % 97, T2A özgüllük % 97