

4.

Bölüm

AYAK VE AYAK BİLEĞİNİN RADYOLOJİK DEĞERLENDİRİLMESİ

Aytaç DOĞAN¹

GİRİŞ

Ayak ve ayak bileği oldukça karmaşık anatomik yapıya sahip olup zaman içerisinde görüntüleme yöntemleri bu bölgenin hastalıklarının değerlendirilmesinde önemini korumuş, görüntüleme eşliğinde yapılan girişimsel işlemler ile de tedavinin bir parçası haline gelmiştir.

Direkt grafi (DG); ayak ve ayak bileğinin değerlendirilmesinde kolay ulaşılabilir olması ve kemik detayları daha iyi gösterebilmesi nedeniyle temel görüntüleme yöntemidir. Cerrahi planlamaya da yol gösterici olması nedeniyle özellikle kompleks travma hastalarında bilgisayarlı tomografi (BT) tercih edilmektedir. Subakut ve kronik ağrısı bulunan hasta grubunda, bağ ve tendon patolojilerinin değerlendirilmesinde manyetik rezonans görüntüleme (MRG); ciltaltı yerleşim gösteren kitle lezyonlarının iç yapısının değerlendirilerek solid veya kistik ayrımının yapılmasında, izole tendon patolojilerinde ultrasonografi (USG) uygulanacak yöntemlerdendir. USG ayrıca ekstraosseöz komponenti bulunan kemik tümörlerinden, yumuşak dokulardan biyopsi yapılması esnasında ve lokal tedavi amaçlı enjeksiyonlarda kılavuz görüntüleme yöntemidir.

Bu bölümde ayak ve ayak bileğini oluşturan kemik yapıların, yumuşak dokuların değerlendirilmesinde tercih edilen görüntüleme yöntemleri ile ilgili temel bilgilerin verilmesi, görüntüleme yöntemlerinin kullanım alanlarının, tanıda rollerinin değerlendirilmesi amaçlanmıştır.

¹ Uzm. Dr. Aytaç DOĞAN, Oltu Devlet Hastanesi Radyoloji Bölümü, aytacdogan2001@gmail.com

KAYNAKLAR

1. Bernau, A. and Berquist, T.H. (1983). Orthopaedic positioning in diagnostic radiology. Baltimore: Urban & Schwarzenberg.
2. Berquist, T.H. (1992). Imaging of orthopedic trauma (Second edit). New York: Raven Press.
3. Frank, E.D., Long, B.W. and Smith, B.J. (2007). Merrill's atlas of radiographic positioning & procedures. (Vol 1. 11th edit). Philadelphia: Mosby/Elsevier.
4. Vangsness CT, Carter V, Hunter T, et al. Radiographic diagnosis of ankle fractures: are three views necessary? Foot & Ankle International. 1994;15(4):172-174.
5. Ostrum RF, De Meo P, Subramanian R. A critical analysis of the anterior-posterior radiographic anatomy of the ankle syndesmosis. Foot & Ankle international. 1995;16(3):128-131.
6. Isherwood I. A radiological approach to the subtalar joint. The Journal of Bone and Joint Surgery. 1961;43(3):566-574.
7. Jonsson K, Fredin HO, Cederlund CG, et al. Width of the normal ankle joint. Acta Radiologica Diagnosis. 1984;25(2):147-149.
8. Olson R. Ankle arthrography. Radiologic Clinics of North America. 1981;19(2):255-268.
9. Johannsen A. Radiological diagnosis of lateral ligament lesion of the ankle: a comparison between talar tilt and anterior drawer sign. Acta Orthopaedica Scandinavica. 1978;49(3):295-301.
10. Brantigan JW, Pedegana LR, Lippert FG. Instability of the subtalar joint. Diagnosis by stress tomography in three cases. The Journal of bone and joint surgery. 1977;59(3):321-324.
11. Foster SC, Foster RR. Lisfranc's tarsometatarsal fracture—dislocation. Radiology. 1976;120(1):79-83.
12. Fox IM, Collier D. Imaging of injuries to the tarsometatarsal joint complex. Clinics in podiatric medicine and surgery. 1997;14(2):357-368.
13. Douglas-Akinwande AC, Buckwalter KA, Rydberg J, et al. Multichannel CT: evaluating the spine in postoperative patients with orthopedic hardware. Radiographics. 2006;26:97-110.
14. Rydberg J, Liang Y, Teague SD. Fundamentals of multichannel CT. Seminars in Musculoskeletal Radiology. 2004;8:137-146.
15. Wexler RJ, Schweitzer ME, Karasick D, et al. Helical CT of calcaneal fractures: technique and imaging features. Skeletal Radiology. 1998;27(1):1-6.
16. Woolson ST, Porvati D, Fillingham LL, et al. Three-dimensional imaging of the ankle joint from computerized tomography. Foot & Ankle. 1985;6(1):2-6.
17. Linsenmaier U, Brunner U, Schoning A, et al. Classification of calcaneal fractures by spiral computed tomography: implications for surgical treatment. European Radiology. 2003;13(10):2315-2322.
18. Zinman C, Reis N. Osteochondritis dissecans of the talus: use of the high resolution computed tomography scanner. Acta Orthopaedica Scandinavica. 1982;53(4):697-700.
19. Lee M-J, Kim S, Lee S-A, et al. Overcoming artifacts from metallic orthopedic implants at high-field-strength MR imaging and multi-detector CT. Radiographics. 2007;27(3):791-803.
20. Jones CP, Coughlin MJ, Shurnas PS. Prospective CT scan evaluation of hindfoot nonunions treated with revision surgery and low-intensity ultrasound stimulation. Foot & ankle international. 2006;27(4):229-235.
21. Von Laer L. Classification, diagnosis, and treatment of transitional fractures of the distal part of the tibia. JBJS. 1985;67(5):687-698.
22. Nyska M, Pomeranz S, Porat S. The advantage of computed tomography in locating a foreign body in the foot. The Journal of trauma. 1986;26(1):93-95.

23. Kaplan, PA. (2009). Foot and Ankle Musculoskeletal MRI. (2nd ed.). Philadelphia: Saunders.
24. Stoller, D.W. and Ferkel, R.D. (2007). Magnetic resonance imaging in orthopaedics and sports medicine. (3 ed. Vol. 1.). Baltimore: Lippincott Williams & Wilkins.
25. Chandnani VP, Harper MT, Ficke JR, et al. Chronic ankle instability: evaluation with MR arthrography, MR imaging, and stress radiography. *Radiology*. 1994;192(1):189-194.
26. Rosenberg ZS, Beltran J, Bencardino JT. MR imaging of the ankle and foot. *Radiographics*. 2000;20:153-179.
27. Linklater J. MR imaging of ankle impingement lesions. *Magnetic Resonance Imaging Clinics*, 17 (4), 775-800.
28. Cerezal L, Abascal F, Canga A, et al. MR arthrography of the ankle: indications and technique. *Radiologic Clinics of North America*. 2006;46(6):973-994.
29. Steinbach LS, Palmer WE, Schweitzer ME. Special focus session: MR arthrography. *Radiographics*. 2002;22(5):1223-1246.
30. Ting AY, Morrison WB, Kavanagh EC. MR imaging of midfoot injury. *Magnetic resonance imaging clinics of North America*. 2008;16(1):105-115.
31. Crim J. Imaging of tarsal coalition. *Radiologic clinics of North America*. 2008;46(6):1017-1026.
32. Kernbach KJ. Tarsal coalitions: etiology, diagnosis, imaging, and stigmata. *Clinics in podiatric medicine and surgery*. 2010;27(1):105-117.
33. Bancroft LW, Peterson JJ and Kransdorf MJ. Imaging of soft tissue lesions of the foot and ankle. *Radiologic Clinics of North America*. 2008;46(6):1093-1103.
34. Marcus CD, Ladam-Marcus VJ, Leone J, et al. MR imaging of osteomyelitis and neuropathic osteoarthropathy in the feet of diabetics. *Radiographics*. 1996;16(6):1337-1348.
35. Klauser AS, Tagliafico A, Allen GM, et al. Clinical indications for musculoskeletal ultrasound: a Delphi-based consensus paper of the European Society of Musculoskeletal Radiology. *European Radiology*. 2012;22(5):1140-1148.
36. Ozcakar L, Tok F, De Mynck M, et al. Musculoskeletal ultrasonography in physical and rehabilitation medicine. *Journal of Rehabilitation Medicine*. 2012;44(4):310-318.
37. Martinoli C, Bianchi S, Dahmane MH, et al. Ultrasound of tendons and nerves. *European Radiology*. 2002;12(1):44-55.
38. Hartgerink P, Fessell DP, Jacobson JA, et al. Full-versus partial-thickness Achilles tendon tears: sonographic accuracy and characterization in 26 cases with surgical correlation. *Radiology*. 2001;220(2):406-412.
39. Levitsky KA, Alman BA, Jevsevar DS, et al. Digital nerves of the foot: anatomic variations and implications regarding the pathogenesis of interdigital neuroma. *Foot & Ankle*. 1993;14(4):208-214.
40. Hsieh LF, Hsu WC, Lin YJ, et al. Is ultrasound-guided injection more effective in chronic subacromial bursitis? *Medicine & Science in Sports & Exercise*. 2013;45(12):2205-2213.
41. Hashiuchi T, Sakurai G, Sakamoto Y, et al. Comparative survey of pain-alleviating effects between ultrasound-guided injection and blind injection of lidocaine alone in patients with painful shoulder. *Archives of orthopaedic and trauma surgery*. 2010;130(7):847-852.