

## BÖLÜM 2.2.

### TANIDA RADYOLOJİK GÖRÜNTÜLEME YÖNTEMLERİ

Sena AZAMAT<sup>1</sup>

Aytül Hande YARDIMCI<sup>2</sup>

#### GİRİŞ

Prostat kanseri, Batı dünyasında erkeklerde en sık görülen deri dışı malignitedir (1). Prostat kanserinin klinik seyri aktif izlem ile yönetilen klinik olarak önesiz kanserlerden ölümcül sonuçlara sahip çok agresif, hızla yayılan formlara kadar değişir. Prostat kanserinin oldukça heterojen seyri, klinik yönetiminde karmaşıklığa ve zorluklara sebep olmaktadır. Bu bölümde amaç, yönlendiren ve görüntüleyen klinisyenlere (tibbi onkologlar, radyasyon onkologları, ürologlar, radyologlar, nükleer tip doktorları ve moleküler görüntüleyiciler dahil), diğer sağlık uzmanlarına, hastalara ve hasta bakıcılaraya mevcut en iyi kanıtlara dayalı olarak prostat kanseri olan hastalar için optimum görüntüleme önerileri sağlamaktır. Klinik karar vermeye ve hasta faydasının optimizasyonuna yardımcı olacak risk sınıflandırma araçları geliştirmek için klinikte serum prostata özgü antijen (PSA) seviyesi, histolojik Gleason derecesini ve primer tümörün hacmi yaygın olarak kullanılmaktadır (2).

Görüntüleme, primer tümörün boyutunu belirleme, lokal ve uzak metastazın varlığını ve kapsamını değerlendirmeye yönelik noninvaziv yaklaşımı sayesinde prostat kanser yönetiminde çok önemli bir rol oynar. En yaygın metastaz bölgeleri lenf düğümleri ve kemiklerdir. Visseral metastazlar daha az yaygın olarak bulunur ve genellikle ilerlemiş, kastrasyona dirençli hastalık ve çok sayıda önceki tedaviden sonra ortaya çıkan histolojik varyantlar ile ilişkilidir (3).

<sup>1</sup> Uzm. Dr. Başakşehir Çam ve Sakura Şehir Hastanesi, Radyoloji Bölümü

<sup>2</sup> Doç. Dr. Başakşehir Çam ve Sakura Şehir Hastanesi, Radyoloji Bölümü

## KAYNAKLAR

1. Trabulsi EJ, Rumble RB, Jadvar H, Hope T, Pomper M, Turkbey B, et al. Optimum Imaging Strategies for Advanced Prostate Cancer: ASCO Guideline. *J Clin Oncol.* 2020;38(17):1963-96.
2. Litwin MS, Tan HJ. The Diagnosis and Treatment of Prostate Cancer: A Review. *Jama.* 2017;317(24):2532-42.
3. Pezaro C, Omlin A, Lorente D, Rodrigues DN, Ferraldeschi R, Bianchini D, et al. Visceral disease in castration-resistant prostate cancer. *Eur Urol.* 2014;65(2):270-3.
4. Nam RK, Saskin R, Lee Y, Liu Y, Law C, Klotz LH, et al. Increasing hospital admission rates for urological complications after transrectal ultrasound guided prostate biopsy. *J Urol.* 2013;189(1 Suppl):S12-7; discussion S7-8.
5. Shahait M, Degheili J, El-Merhi F, Tamim H, Nasr R. Incidence of sepsis following transrectal ultrasound guided prostate biopsy at a tertiary-care medical center in Lebanon. *Int Braz J Urol.* 2016;42(1):60-8.
6. Kasivisvanathan V, Rannikko AS, Borghi M, Panebianco V, Mynderse LA, Vaarala MH, et al. MRI-Targeted or Standard Biopsy for Prostate-Cancer Diagnosis. *N Engl J Med.* 2018;378(19):1767-77.
7. Ahmed HU, Kirkham A, Arya M, Illing R, Freeman A, Allen C, et al. Is it time to consider a role for MRI before prostate biopsy? *Nat Rev Clin Oncol.* 2009;6(4):197-206.
8. Grey ADR, Scott R, Shah B, Acher P, Liyanage S, Pavlou M, et al. Multiparametric ultrasound versus multiparametric MRI to diagnose prostate cancer (CADMUS): a prospective, multi-centre, paired-cohort, confirmatory study. *Lancet Oncol.* 2022;23(3):428-38.
9. Mohler JL, Antonarakis ES, Armstrong AJ, D'Amico AV, Davis BJ, Dorff T, et al. Prostate Cancer, Version 2.2019, NCCN Clinical Practice Guidelines in Oncology. *J Natl Compr Canc Netw.* 2019;17(5):479-505.
10. Turkbey B, Rosenkrantz AB, Haider MA, Padhani AR, Villeirs G, Macura KJ, et al. Prostate Imaging Reporting and Data System Version 2.1: 2019 Update of Prostate Imaging Reporting and Data System Version 2. *Eur Urol.* 2019;76(3):340-51.
11. O'Shea A, Harisinghani M. PI-RADS: multiparametric MRI in prostate cancer. *Magma.* 2022;35(4):523-32.
12. Purysko AS, Rosenkrantz AB, Turkbey IB, Macura KJ. RadioGraphics Update: PI-RADS Version 2.1-A Pictorial Update. *Radiographics.* 2020;40(7):E33-e7.
13. Le JD, Tan N, Shkolyar E, Lu DY, Kwan L, Marks LS, et al. Multifocality and prostate cancer detection by multiparametric magnetic resonance imaging: correlation with whole-mount histopathology. *Eur Urol.* 2015;67(3):569-76.
14. Turkbey B, Pinto PA, Mani H, Bernardo M, Pang Y, McKinney YL, et al. Prostate cancer: value of multiparametric MR imaging at 3 T for detection--histopathologic correlation. *Radiology.* 2010;255(1):89-99.
15. Woo S, Suh CH, Kim SY, Cho JY, Kim SH. Head-To-Head Comparison Between High- and Standard-b-Value DWI for Detecting Prostate Cancer: A Systematic Review and Meta-Analysis. *AJR Am J Roentgenol.* 2018;210(1):91-100.
16. Xu J, Humphrey PA, Kibel AS, Snyder AZ, Narra VR, Ackerman JJH, et al. Magnetic resonance diffusion characteristics of histologically defined prostate cancer in humans. *Magnetic Resonance in Medicine.* 2009;61(4):842-50.
17. Rosenkrantz AB, Hindman N, Lim RP, Das K, Babb JS, Mussi TC, et al. Diffusion-weighted imaging of the prostate: Comparison of b1000 and b2000 image sets for index lesion detection. *J Magn Reson Imaging.* 2013;38(3):694-700.

18. Padhani AR, Liu G, Koh DM, Chenevert TL, Thoeny HC, Takahara T, et al. Diffusion-weighted magnetic resonance imaging as a cancer biomarker: consensus and recommendations. *Neoplasia.* 2009;11(2):102-25.
19. Erbersdobler A, Isbarn H, Dix K, Steiner I, Schlomm T, Mirlacher M, et al. Prognostic value of microvessel density in prostate cancer: a tissue microarray study. *World J Urol.* 2010;28(6):687-92.
20. Oto A, Kayhan A, Jiang Y, Tretiakova M, Yang C, Antic T, et al. Prostate cancer: differentiation of central gland cancer from benign prostatic hyperplasia by using diffusion-weighted and dynamic contrast-enhanced MR imaging. *Radiology.* 2010;257(3):715-23.
21. Roy C, Foudi F, Charton J, Jung M, Lang H, Saussine C, et al. Comparative sensitivities of functional MRI sequences in detection of local recurrence of prostate carcinoma after radical prostatectomy or external-beam radiotherapy. *AJR Am J Roentgenol.* 2013;200(4):W361-8.
22. Cha D, Kim CK, Park SY, Park JJ, Park BK. Evaluation of suspected soft tissue lesion in the prostate bed after radical prostatectomy using 3T multiparametric magnetic resonance imaging. *Magn Reson Imaging.* 2015;33(4):407-12.
23. Jambor I, Boström PJ, Taimen P, Syvänen K, Kähkönen E, Kallajoki M, et al. Novel biparametric MRI and targeted biopsy improves risk stratification in men with a clinical suspicion of prostate cancer (IMPROD Trial). *J Magn Reson Imaging.* 2017;46(4):1089-95.
24. Boesen L, Nørgaard N, Løgager V, Balslev I, Bisbjerg R, Thestrup KC, et al. Assessment of the Diagnostic Accuracy of Biparametric Magnetic Resonance Imaging for Prostate Cancer in Biopsy-Naïve Men: The Biparametric MRI for Detection of Prostate Cancer (BIDOC) Study. *JAMA Netw Open.* 2018;1(2):e180219.
25. Alabousi M, Salameh JP, Gusenbauer K, Samoilov L, Jafri A, Yu H, et al. Biparametric vs multiparametric prostate magnetic resonance imaging for the detection of prostate cancer in treatment-naïve patients: a diagnostic test accuracy systematic review and meta-analysis. *BJU Int.* 2019;124(2):209-20.
26. Loeb S, Vellekoop A, Ahmed HU, Catto J, Emberton M, Nam R, et al. Systematic review of complications of prostate biopsy. *Eur Urol.* 2013;64(6):876-92.
27. Pokorny MR, de Rooij M, Duncan E, Schröder FH, Parkinson R, Barentsz JO, et al. Prospective study of diagnostic accuracy comparing prostate cancer detection by transrectal ultrasound-guided biopsy versus magnetic resonance (MR) imaging with subsequent MR-guided biopsy in men without previous prostate biopsies. *Eur Urol.* 2014;66(1):22-9.
28. Wegelin O, van Melick HHE, Hooft L, Bosch J, Reitsma HB, Barentsz JO, et al. Comparing Three Different Techniques for Magnetic Resonance Imaging-targeted Prostate Biopsies: A Systematic Review of In-bore versus Magnetic Resonance Imaging-transrectal Ultrasound fusion versus Cognitive Registration. Is There a Preferred Technique? *Eur Urol.* 2017;71(4):517-31.
29. Stabile A, Giganti F, Emberton M, Moore CM. MRI in prostate cancer diagnosis: do we need to add standard sampling? A review of the last 5 years. *Prostate Cancer Prostatic Dis.* 2018;21(4):473-87.
30. Ahmed HU, El-Shater Bosaily A, Brown LC, Gabe R, Kaplan R, Parmar MK, et al. Diagnostic accuracy of multi-parametric MRI and TRUS biopsy in prostate cancer (PROMIS): a paired validating confirmatory study. *Lancet.* 2017;389(10071):815-22.
31. Drost FH, Osse D, Nieboer D, Steyerberg EW, Bangma CH, Roobol MJ, et al. Prostate MRI, with or without MRI-targeted biopsy, and systematic biopsy for detecting prostate cancer. *Cochrane Database Syst Rev.* 2019;4(4):Cd012663.