

# Bölüm 4

## AZOSPERMİ OLGULARINDA RADYOLOJİK GÖRÜNTÜLEME YÖNTEMLERİ

*Semra DEMİRENK<sup>1</sup>  
Murat Serkant ÜNAL<sup>2</sup>*

### GİRİŞ

İnfertilite bir yıl boyunca sık ve korunmasız cinsel ilişkiye rağmen gebeliğin sağlanamaması olarak tanımlanır (1). Dünya Sağlık Örgütü tarafından yapılan çok merkezli bir çalışmada, infertilite vakalarının %20'sinde nedenin ağırlıklı olarak erkek olduğu ve %27'sinde ise her iki partnerde de anormallik olduğu bildirilmiştir. Bu nedenle, kısırlık vakalarının yaklaşık %50'sinde erkek faktörü mevcuttur (2). Erkek infertilite tanısı alan bu hastaların üçte birinde fiziksel bir neden belirlenir (3).

Erkek infertilitesinin nedenleri;

- 1) Pre-testiküler azospermi (%2): Hipotalamik veya hipofiz anormalliği nedeniyle hipogonadotropik hipogonadizm teşhisi konan azospermi olguları.
- 2) Testis yetmezliği veya obstrüktif olmayan azospermi (%49-93): Testis yetmezliği olan erkeklerde ya azalmış spermatogenez (hipospermatogenez-erken veya geç spermatogenez safhasında duraksama) ya da Sertoli-cell only sendromunda görülen spermatogenezin tüm basamaklarının ilerleyememesi şeklinde görülür (1-4).

<sup>1</sup> Uzm. Dr, Denizli Devlet Hastanesi, Radyoloji Bölümü, semra\_demirlenk@hotmail.com

<sup>2</sup> Dr. Öğr. Üyesi, Pamukkale Üniversitesi Tıp Fakültesi Histoloji ve Embriyoloji AD, serkantunal72@gmail.com

TESE Operasyonu öncesi radyolojik yöntemlerin kullanılması ile başarı oranları arttırılmaya çalışılmaktadır. Testis perfüzyonunun testis tübüler fonksiyonu ve sperm üretiminin olduğu odaklar ile ilişkili olduğu varsayılarak son yıllarda renkli Doppler, power Doppler ultrasonografi, kontrastlı ultrasonografi ve manyetik rezonans görüntüleme yöntemleri kullanılmaya başlanmıştır.

Sonuç olarak azospermi hastalarını sınıflandırmak, etkili tedavi yöntemlerini bulabilmek ve sperm üretiminin olduğu seminifer tübüllerin lokalizasyonunu belirlemek için radyolojik görüntüleme yöntemleri kullanılabilir.

## KAYNAKLAR

1. Guttmacher AF. (1956). Factors affecting normal expectancy of conception. *J Am Med Assoc* 30;161(9):855-60. doi: 10.1001/jama.1956.02970090081016.
2. World Health Organization Towards more objectivity in diagnosis and management of male infertility. (1987). *Int J Androl (Suppl.)* ;7:1-5355-60
3. Moon MH, Kim SH, Cho JY, et al. (2006). Scrotal US for evaluation of infertile men with azoospermia. *Radiology* 239:168-73. doi: 10.1148/radiol.2391050272
4. Sakamoto H, Saito K, Oohta M, et al. (2007). Testicular volume measurement: comparison of ultrasonography, orchidometry, and water displacement. *Urology* 69:152-157. doi: 10.1016/j.urology.2006.09.012.
5. Fogle RH, Steiner AZ, Marshall FE, et al. (2006). Etiology of azoospermia in a large nonreferral inner-city population. *Fertil Steril* 86:197-9.
6. Matsumiya K, Namiki M, Takahara S, et al. (1994). Clinical study of azoospermia. *Int J Androl* 17:140-2.
7. Phse G, Hense J, Bergmann M, et al. (2011). Bilateral histological evaluation of exocrine testicular function in men with obstructive azoospermia: condition of spermatogenesis and andrological implications? *Hum Reprod* 26:2606-2612. doi: 10.1093/humrep/der257
8. Wosnitzer M, Goldstein M, Hardy MP. (2014). Review of azoospermia. *Spermatogenesis* 4:e28218. doi: 10.4161/spmg.28218rep/der257.
9. Edey AJ, Sidhu PS. (2008). Male infertility: role of imaging in the diagnosis and management. *Imaging* 20:139-46
10. Craft I, Shrivastav P. (1994). Treatment of male infertility. *Lancet* 344:191-192
11. Tournaye H, Liu J. et al (1996): Correlation between testicular histology and outcome after intracytoplasmic sperm injection using testicular spermatozoa. *Human Reproduction* 11:127-132.
12. Leir SH, Browne JA, Eggener SE, et al. (2015). Characterization of primary cultures of adult human epididymis epithelial cells. *Fertil Steril* 103(3):647-54
13. Kahraman S, Ozgur S, et al. (1996): Fertility with testicular sperm extraction and intracytoplasmic sperm injection in nonobstructive azoospermic *Hum Reprod* 11(4):756-60. doi:10.1093/oxfordjournals.humrep.a019249.

14. Jow WW, Steckel J. et al, (1993): Motile sperm in human testis biopsy specimens. *Journal of Andrology* 14:194–198
15. Har-Toov J, Eytan O, Hauser R, et al. (2004). A new power Doppler ultrasound guiding tech. *Fertil Steril* 81:430–434.
16. Nowroozi MR, Ayati M, Amini E, et al. (2015). Assessment of testicular perfusion prior to sperm extraction predicts success rate and decreases the number of required biopsies in patients with non-obstructive azoospermia. *Int Urol Nephrol* 47:53–58
17. Raviv G , Mor Y , Levron J, et al. (2006). Role of transrectal ultrasonography in the evaluation of azoospermic men with low-volume ejaculate . *J Ultrasound Med* 25 ( 7 ) : 825 – 829 .
18. Du J, Li FH, Guo YF, et al. (2010). Differential diagnosis of azoospermia and etiologic classification of obstructive azoospermia: role of scrotal and transrectal US. *Radiology* 256 (2): 493-503. doi:10.1148/radiol.10091578
19. Baxter GM, Sidhu PS, et al. (2006). Diseases of the testis and epididymis. In: *Ultrasound of the urogenital system*. Stuttgart, Germany: Thieme; pp 153–80
20. Saito K.Ogawa Y.Yoshida H. (2007). Testicular volume measurements using Prader orchidometer versus ultrasonography in patients with infertility. *Urology* 69: 158-162.18.
21. Moon MH, Seo JT, Chun YK, et al. (2012). Role of ultrasound volume measurements of testes in evaluation of infertile men with azoospermia. *Ultrasonography* 31:87–91.
22. Donkol RH. (2010). Imaging in male-factor obstructive infertility. *World J Radiol.* 2(5):172-9.
23. Schlegel PN. (2004). Causes of azoospermia and their management. *Reprod Fertil Dev* 16 (5) 561–572
24. Bennett HF, Middleton WD, Bullock AD, et al. (2001). Testicular microlithiasis: US follow up. *Radiology* 218 (2) 359–363
25. Xu C, Liu M, Zhang FF, et al. (2014). The association between testicular microlithiasis and semen parameters in Chinese adult men with fertility intention: experience of 226 cases. *Urology* 84 (4) 815–820
26. Sofikitis N, Stavrou S, Skouros S, et al. (2014). Mysteries facts and fiction in varicocele pathophysiology and treatment. *European Urology Supplements* 13:89–99.
27. Agarwal A, Sharma R, Harlev A, et al. (2016) Effect of varicocele on semen characteristics according to the new 2010 World Health Organization criteria: a systematic review and meta-analysis. *Asian J Androl* 18(2):163-70.
28. Czaplicki M, Bablok L, Janczewski Z. (1979).Varicocelectomy in patients with azoospermia. *Arch Androl* 3(1) 51–55
29. Matthews GJ, Matthews ED, Goldstein M. (1998). Induction of spermatogenesis and achievement of pregnancy after microsurgical varicocelectomy in men with azoospermia and severe oligoasthenospermia. *Fertil Steril* 70(1):71-5. doi: 10.1016/s0015-0282(98)00108-3.
30. Unsal A, Turgut AT, Taşkin F, et al. (2007) Resistance and pulsatility index increase in capsular branches of testicular artery: indicator of impaired testicular microcirculation in varicocele? *J Clin Ultrasound.* 35(4):191-5.
31. Schurich M, Aigner F, Frauscher F, et al. (2009) The role of ultrasound in assessment of male fertility. *Eur J Obstet Gynecol Reprod Biol.* 144 Suppl 1:S192-8.
32. Semiz I, Tokgöz O, Tokgoz H, et al. (2014). The investigation of correlation between semen analysis parameters and intraparenchymal testicular spectral Doppler indices in patients with clinical varicocele. *Ultrasound Q* 30(1):33-40.
33. Foresta C.Garolla A.Bettella A, et al. (1998). Doppler ultrasound of the testis in azoospermic subjects as a parameter of testicular function.*Hum Reprod* 13: 3090-3093

34. Schlegel PN, Su LM. (1997). Physiological consequences of testicular sperm extraction. *Hum Reprod* 12 (8) 1688–1692.
35. Colpi GM, Negri L, Nappi RE et al. (1997). Is transrectal ultrasonography a reliable diagnostic approach in ejaculatory duct sub-obstruction? *Hum Reprod* 12(10):2186-91.
36. Meacham RB, Hellerstein DK, Lipshultz LI. (1993). Evaluation and treatment of ejaculatory duct obstruction in the infertile male. *Fertil Steril* 59: 393–7.
37. Engin G, Kadioğlu A, Orhan I, et al. (2000). Transrectal US and endorectal MR imaging in partial and complete obstruction of the seminal duct system: a comparative study. *Acta Radiol* 41:288–95.
38. Kuligowska E, Fenlon HM. (1998). Transrectal US in male infertility: spectrum of findings and role in patient care. *Radiology* 207(1):173-81.
39. Gudeloglu A. (2011). Update in the evaluation of the azoospermic male. Department of Urology, United States Clinics vol.68 suppl.1
40. Caretta N, Palego P, Schipilliti M, et al. (2010). Testicular contrast harmonic imaging to evaluate intratesticular perfusion alterations in patients with varicocele. *J Urol* 183:263
41. Cassidy FH, Ishioka KM, McMahon CJ, et al. (2010) İmaging of scrotal tumors and pseudo-tumors. *Radiographics* 30(3):665-83.
42. Tsili AC, Giannakis D, Sylakos A, et al. (2014). MR imaging of scrotum. *Magn Reson Imaging Clin N Am* 22(2):217-38.
43. Tsili AC, Bertolotto M, Turgut AT, et al. (2018). MRI of the scrotum: Recommendations of the ESUR scrotal and penile imaging working group. *Eur Radiol* 28:31–43. doi: 10.1007/s00330-017-4944-3.
44. Tsili AC, Bertolotto M, Rocher L, et al. (2018). Sonographically indeterminate scrotal masses: how MRI helps in characterization. *Diagn Interv Radiol* 24:225–236. doi: 10.5152/dir.2018.17400.
45. Ammar T, Sidhu PS, Wilkins CJ. (2012). Male infertility: the role of imaging in diagnosis and management. *Br J Radiol* 85( Spec issue 1):S59–68. doi: 10.1259/bjr/31818161.
46. Tsili AC, Ntorkou A, Goussia A, et al. (2018). Diffusion tensor imaging parameters in testes with nonobstructive azoospermia. *J Magn Reson Imaging* 48:1318–1325. doi: 10.1002/jmri.26050.
47. Han BH, Park S Bin, Seo JT, et al. (2018). Usefulness of testicular volume, apparent diffusion coefficient, and normalized apparent diffusion coefficient in the MRI evaluation of infertile men with azoospermia. *AJR Am J Roentgenol* 210:543–5
48. Ünal MS, Özer MC. Nonobstrüktif Azospermi Olgularında Yeni Yaklaşımlar. *SDÜ Tıp Fak Derg* 2019;26(1):111-116 doi: 10.17343/sdutfd.39