

Bölüm 8

ERKEK İNFERTİLİTESİ

Miraç ÖZALP¹

GİRİŞ

İnfertilite, bir yıl süren korunmasız cinsel ilişkiye rağmen gebe kalmada başarısızlık olarak tanımlanmaktadır. Ancak, ilk 12 ayda gebe kalamayan genç ve sağlıklı çiftlerin %50'si kadarı, takip eden 12 ay boyunca spesifik bir tedavi almaksızın gebe kalacaktır (1). Bu nedenle, bazı durumlarda kapsamlı değerlendirme ve tedavide gecikme makul olabilir. İnfertilitesi olan çiftlerin yaklaşık %35'inde, bir kadın faktörü ile birlikte bir erkek faktörü tanımlanmaktadır, yaklaşık %10 oranında oranında ise erkek faktör tanımlanabilir tek nedendir.

Amerika Birleşik Devletleri'nde 15-44 yaş arasındaki erkeklerde yapılan kesitsel bir araştırma, erkek infertilitesi prevalansının %12 (%95 CI 7-23) olduğunu göstermiştir (2). Epidemiyoloji çalışmaları, 40 yaş üstü erkeklerde fertilité oranlarının daha düşük olduğunu göstermektedir (3), ancak yardımcı üreme teknolojilerinden (YÜT) elde edilen sonuçlar bu gözlemi doğrulamamıştır (4,5).

Erkek infertilitesinin nedenleri dört ana başlığa ayrılabilir (6):

- Endokrin ve sistemik bozukluklar (genellikle hipogonadotropik hipogonadizm ile ilişkilidir) - %2-5.
- Spermatogeneizde primer testikular defektler - %65-80.
- Sperm transport bozuklukları - % 5.
- İdiyopatik erkek infertilitesi - %10-20.

¹ Op.Dr. Miraç Özalp, Karadeniz Teknik Üniversitesi Tıp Fakültesi Kadın Hastalıkları ve Doğum Anabilim Dalı, Perinatoloji Bilim Dalı, ozalpmirac@gmail.com

(2) sperm konsantrasyonu <5 milyon / mL olan infertil erkekler için Y kromozomal mikrolelesyonunun test edilmesi;

(3) konjenital bilateral vas deferens olmayan infertil erkeklerde kistik fibroz ile ilişkili gen mutasyonlarının taranması (29,54).

Donör spermiyle YÜT - Donör spermiyle YÜT'ün test edilmiş yöntemi, normal kadın alıcılarda çok yüksek bir başarı oranına sahiptir: altı döllenme dönüsünde yüzde 50 gebelik oranı. Donör inseminasyonu ile oluşan gebeliklerden doğan çocuklar hem fiziksel hem de psikolojik olarak normal şekilde büyür ve gelişir (55). Bu alternatif, evlat edinme ile birlikte, erkek faktöre bağlı infertilitesi olan tüm çiftlere sunulmalıdır.

REFERANSLAR

1. Evers JL. Female subfertility. *Lancet* 2002; 360:151.
2. Louis JF, Thoma ME, Sørensen DN, et al. The prevalence of couple infertility in the United States from a male perspective: evidence from a nationally representative sample. *Andrology* 2013; 1:741.
3. De La Rochebrochard E, Thonneau P. Paternal age: are the risks of infecundity and miscarriage higher when the man is aged 40 years or over? *Rev Epidemiol Sante Publique* 2005; 53 Spec No 2:2S47.
4. Aboulghar M, Mansour R, Al-Inany H, et al. Paternal age and outcome of intracytoplasmic sperm injection. *Reprod Biomed Online* 2007; 14:588.
5. Bellver J, Garrido N, Remohí J, et al. Influence of paternal age on assisted reproduction outcome. *Reprod Biomed Online* 2008; 17:595.
6. Jungwirth A, Giwercman A, Tournaye H, et al. European Association of Urology guidelines on Male Infertility: the 2012 update. *Eur Urol* 2012; 62:324.
7. World Health Organization Department of Reproductive Health and Research. World Health Organization Laboratory Manual for the Examination and Processing of Human Semen, 5th ed, World Health Organization, Geneva, Switzerland 2010.
8. Cooper TG, Noonan E, von Eckardstein S, et al. World Health Organization reference values for human semen characteristics. *Hum Reprod Update* 2010; 16:231.
9. McLachlan RI, O'Bryan MK. Clinical Review#: State of the art for genetic testing of infertile men. *J Clin Endocrinol Metab* 2010; 95:1013.
10. Hofherr SE, Wiktor AE, Kipp BR, et al. Clinical diagnostic testing for the cytogenetic and molecular causes of male infertility: the Mayo Clinic experience. *J Assist Reprod Genet* 2011; 28:1091.
11. Sokol RZ. Endocrinology of male infertility: evaluation and treatment. *Semin Reprod Med* 2009; 27:149.
12. Anawalt BD. Approach to male infertility and induction of spermatogenesis. *J Clin Endocrinol Metab* 2013; 98:3532.
13. Bhasin S, Ma K, de Kretser DM. Y-chromosome microdeletions and male infertility. *Ann Med* 1997; 29:261.
14. Hotaling J, Carrell DT. Clinical genetic testing for male factor infertility: current applications and future directions. *Andrology* 2014; 2:339.
15. Martin RH. Cytogenetic determinants of male fertility. *Hum Reprod Update* 2008; 14:379.
16. Krausz C, Quintana-Murci L, Barboux S, et al. A high frequency of Y chromosome deletions in males with nonidiopathic infertility. *J Clin Endocrinol Metab* 1999; 84:3606.

17. Page DC, Silber S, Brown LG. Men with infertility caused by AZFc deletion can produce sons by intracytoplasmic sperm injection, but are likely to transmit the deletion and infertility. *Hum Reprod* 1999; 14:1722.
18. De Kretser DM, Baker HW. Infertility in men: recent advances and continuing controversies. *J Clin Endocrinol Metab* 1999; 84:3443.
19. Schiff JD, Palermo GD, Veeck LL, et al. Success of testicular sperm extraction [corrected] and intracytoplasmic sperm injection in men with Klinefelter syndrome. *J Clin Endocrinol Metab* 2005; 90:6263.
20. Bernie AM, Mata DA, Ramasamy R, Schlegel PN. Comparison of microdissection testicular sperm extraction, conventional testicular sperm extraction, and testicular sperm aspiration for nonobstructive azoospermia: a systematic review and meta-analysis. *Fertil Steril* 2015; 104:1099.
21. Cissen M, Bendsdorp A, Cohlen BJ, et al. Assisted reproductive technologies for male subfertility. *Cochrane Database Syst Rev* 2016; 2:CD000360.
22. Zini A, Bach PV, Al-Malki AH, Schlegel PN. Use of testicular sperm for ICSI in oligozoospermic couples: how far should we go? *Hum Reprod* 2017; 32:7.
23. Lanfranco F, Kamischke A, Zitzmann M, Nieschlag E. Klinefelter's syndrome. *Lancet* 2004; 364:273.
24. Al-Ali BM, Marszałek M, Shamloul R, et al. Clinical parameters and semen analysis in 716 Austrian patients with varicocele. *Urology* 2010; 75:1069.
25. Kim HH, Goldstein M. Adult varicocele. *Curr Opin Urol* 2008; 18:608.
26. Kroese AC, de Lange NM, Collins J, Evers JL. Surgery or embolization for varicoceles in subfertile men. *Cochrane Database Syst Rev* 2012; 10:CD000479.
27. World Health Organization. WHO laboratory manual for the examination of human semen and sperm-cervical mucus interaction, 4th Ed., Cambridge University Press, Cambridge 1999.
28. Eley A, Pacey AA, Galdiero M, et al. Can Chlamydia trachomatis directly damage your sperm? *Lancet Infect Dis* 2005; 5:53.
29. Schuppe HC, Pilatz A, Hossain H, et al. Urogenital Infection as a Risk Factor for Male Infertility. *Dtsch Arztebl Int* 2017; 114:339.
30. Hamada A, Agarwal A, Sharma R, et al. Empirical treatment of low-level leukocytospermia with doxycycline in male infertility patients. *Urology* 2011; 78:1320.
31. Showell MG, Mackenzie-Proctor R, Brown J, et al. Antioxidants for male subfertility. *Cochrane Database Syst Rev* 2014; :CD007411.
32. Vandekerckhove P, Lilford R, Vail A, Hughes E. Clomiphene or tamoxifen for idiopathic oligo/asthenospermia. *Cochrane Database Syst Rev* 2000; :CD000151.
33. Gunn DD, Bates GW. Evidence-based approach to unexplained infertility: a systematic review. *Fertil Steril* 2016; 105:1566.
34. Attia AM, Abou-Setta AM, Al-Inany HG. Gonadotrophins for idiopathic male factor subfertility. *Cochrane Database Syst Rev* 2013; :CD005071.
35. Wang C, McDonald V, Leung A, et al. Effect of increased scrotal temperature on sperm production in normal men. *Fertil Steril* 1997; 68:334.
36. Munkelwitz R, Gilbert BR. Are boxer shorts really better? A critical analysis of the role of underwear type in male subfertility. *J Urol* 1998; 160:1329.
37. Oldereid NB, Rui H, Purvis K. Life styles of men in barren couples and their relationship to sperm quality. *Int J Fertil* 1992; 37:343.
38. Wilcox AJ, Weinberg CR, Baird DD. Timing of sexual intercourse in relation to ovulation. Effects on the probability of conception, survival of the pregnancy, and sex of the baby. *N Engl J Med* 1995; 333:1517.
39. Mehta A, Sigman M. Management of the dry ejaculate: a systematic review of aspermia and retrograde ejaculation. *Fertil Steril* 2015; 104:1074.
40. Jefferys A, Siassakos D, Wardle P. The management of retrograde ejaculation: a systematic review and update. *Fertil Steril* 2012; 97:306.

41. Smith JF, Walsh TJ, Turek PJ. Ejaculatory duct obstruction. *Urol Clin N Am* 2008; 35:221.
42. Majzoub A, Tadros NN, Polackwich AS, et al. Vasectomy reversal semen analysis: new reference ranges predict pregnancy. *Fertil Steril* 2017; 107:911.
43. Nagler HM, Jung H. Factors predicting successful microsurgical vasectomy reversal. *Urol Clin North Am* 2009; 36:383.
44. Belker AM, Thomas AJ Jr, Fuchs EF, et al. Results of 1,469 microsurgical vasectomy reversals by the Vasovasostomy Study Group. *J Urol* 1991; 145:505.
45. de Kretser DM. Male infertility. *Lancet* 1997; 349:787.
46. Sunderam S, Kissin DM, Crawford SB, et al. Assisted Reproductive Technology Surveillance - United States, 2014. *MMWR Surveill Summ* 2017; 66:1.
47. Schlegel PN, Girardi SK. Clinical review 87: In vitro fertilization for male factor infertility. *J Clin Endocrinol Metab* 1997; 82:709.
48. Tarlatzis BC, Bili H. Intracytoplasmic sperm injection. Survey of world results. *Ann N Y Acad Sci* 2000; 900:336.
49. Ramasamy R, Ricci JA, Palermo GD, et al. Successful fertility treatment for Klinefelter's syndrome. *J Urol* 2009; 182:1108.
50. Tesarik J, Mendoza C, Testart J. Viable embryos from injection of round spermatids into oocytes. *N Engl J Med* 1995; 333:525.
51. Al-Hasani S, Ludwig M, Palermo I, et al. Intracytoplasmic injection of round and elongated spermatids from azoospermic patients: results and review. *Hum Reprod* 1999; 14 Suppl 1:97.
52. Donoso P, Tournaye H, Devroey P. Which is the best sperm retrieval technique for non-obstructive azoospermia? A systematic review. *Hum Reprod Update* 2007; 13:539.
53. Schlegel PN. Nonobstructive azoospermia: a revolutionary surgical approach and results. *Semin Reprod Med* 2009; 27:165.
54. McLachlan RI, O'Bryan MK. Clinical Review#: State of the art for genetic testing of infertile men. *J Clin Endocrinol Metab* 2010; 95:1013.
55. Kovacs GT, Mushin D, Kane H, Baker HW. A controlled study of the psycho-social development of children conceived following insemination with donor semen. *Hum Reprod* 1993; 8:788.