

BÖLÜM 23

Erkek faktörü ve Üremeye Yardımcı Teknikler

Ulun ULUĞ¹

GİRİŞ

Dünya sağlık örgütü infertiliteyi en az 12 ay düzenli, korunmasız cinsel ilişkiden sonra gebe kalamama olarak tanımlamaktadır. İnfertilite dünya çapında önemli bir sağlık sorunudur ve üreme çağındaki çiftlerin yaklaşık %12'sini etkilemektedir. İnfertilitenin prevalansının 1990 ve 2017 yılları arasında artışı yaşlara göre standardize edildiğinde 1990 ve 2017 yılları arasında, yaşa göre standardize edilmiş kısırlık prevalansının her yıl kadınlarda %0,370 ve erkeklerde %0,291 arttığı gösterilmiştir (1). Sadece Erkeğe bağlı infertilite olguları % 30 olmakla birlikte, %20 oranında kadın infertilitesine erkek faktörü de eşlik etmektedir. İlginç olarak hayat şartlarının teknolojiyle birlikte artmasına rağmen son 60 yılda erkeklerde sperm sayısının %50 oranında azalmakta olduğu gösterilmiştir (2). Erkek infertilitesi konjenital edinsel veya idiyomatik olabilmektedir. Erkeğe bağlı infertilite etyolojisi bu kitabın başka bölümlerinde daha detaylı anlatılmıştır. Jinekolojik açıdan infertilite şikayeti olan bir çifti incelediğimizde erkeğe bağlı bir neden olup olmadığını uygun kalitede incelenmiş sperm analizi ile anlayabilmekteyiz. Bu bağlamda spermiyogram testi sonucuna göre erkek faktörünü adlandırmaktayız:

¹ Prof. Dr., Haliç Üniversitesi Tıp Fakültesi, Kadın Hastalıkları ve Doğum AD., uulug@hotmail.com

KAYNAKLAR

1. Zegers-Hochschild F, Adamson GD, Dyer S ve ark. The International glossary on infertility and fertility care. *Fertil Steril*;108,393-406 (2017)
2. Levine H, Jorgensen N, Martino-Andrade A ve ark. Temporal trends in sperm count: a systematic review and meta regression analysis. *Hum Reprod Update*; 23, 646-59 (2017)
3. Cariati F, D'Argenio V, Tomaiuolo R. The evolving role of genetic tests in reproductive medicine. *J. Transl Med*; 17, 267 (2019)
4. Ravel C, Berthaut I, Bresson JL, Siffroi JP. Prevalance of chromosomal abnormalities in phenotypically normal and fertile males: large scale survey of over 10000 sperm donor karyotypes. *Hum Reprod*; 21, 1484-89 (2006)
5. Colaco S, Modi D. Genetics of the human Y chromosome and its association with male infertility. *Reprod Biol Endocrinol*;17,16 (2018)
6. Se Hwan Park 1 , Hyo Serk Lee, Jin Ho Choe, Joong Shik Lee, Ju Tae Seo. Success rate of microsurgical multiple testicular sperm extraction and sperm presence in the ejaculate in Korean men with y chromosome. *Korean J Urol*;54:536-40 (2013).
7. Genetics of the congenital absence of the vas deferens. Birth E, Hamdi SM, Mieuisset. *Hum Genet*; 140: 59–76 (2021)
8. Yanagimachi R. Zone free hamster eggs: Their use in assessing fertilizing capacity and examining chromosomes of human spermatozoa. *Gamete Res.*;10, 187-232 (1984)
9. Gordon JW, Grunfeld L, Garrisi GJ, Talansky BE ve ark. Fertilisation of human oocytes by sperm from infertile males after zona pellucid drilling. *Fertil Steril*; 50, 68-73 (1988)
10. Kiessling AA, Loutradis D, McShane PM, Jackson KV. Fertilisation in trypsin-treated oocytes. *Ann N Y Acad Sci*; 541, 614-20 (1988)
11. Palermo G, Joris H, Devroey P, Van Steirteghem AC. Induction of acrosome reaction in human spermatozoa used for subzonal insemination. *Hum Reprod*; 7,248-54 (1992)
12. Lanzendorf SE, Maloney MK, Vleck LL, Slusser J, Rosenwaks Z. A preclinical evaluation of pronuclear formation by microinjection of human spermatozoa into human oocytes. *Fertil Steril*; 49, 835-42 (1988)
13. Palermo G, Joris H, Derde MP, Camus M, Devroey P, Van Steirteghem. A Sperm characteristics and outcome of human assisted fertilization by subzonal insemination and intracytoplasmic sperm injection. *Fertil Steril*; 59, 826-35 (1993)
14. Oseguera-López1 I Ruiz-Díaz S, Ramos-Ibeas P. Novel Techniques of Sperm Selection for Improving IVF and ICSI Outcomes. *Front Cell Dev Biol.* 7: 298 (2019).
15. Single-center thorough evaluation and targeted treatment of globozoospermic men. Cheung, Alessandra Parrella, Danielle Tavares, Derek Keating, Philip Xie, Zev Rosenwaks, Gianpiero D. Palermo. *J Assist Reprod Genet.*; 38, 2073–2086 (2021)
16. Haddad M, Stewart J, Xie P ve ark. Thoughts on the popularity of ICSI. *J Assist Reprod Genet*; 38, 101-23 (2021)
17. Alvarez JG, Lasso JL, Blasco L ve ark. Centrifugation of human spermatozoa induces sublethal damage. Separation of human spermatozoa from seminal plasma by dextran swim up procedure without centrifugation extends their motile lifetime. *Hum Reprod*; 8, 1087-92 (1993)
18. Pousette A, Akerloff E, Rosenborg L, Fredricsson B. Increase in progressive motility and improved morphology of human spermatozoa following their migration through Percoll gradients. *Int J Androl.*;9, 1-13 (1986)

19. Jayaraman, V., Upadhyaya, D., Narayan, P.K. and Adiga, S.K. (2012) Sperm processing by swim-up and density gradient is effective in elimination of sperm with DNA damage. *J Assist Reprod Genet* 29:557-63.
20. Parmegiani, L., Cognigni, G.E., Bernardi, S., Troilo, E., Taraborrelli, S., Arnone, A., et al. (2012) Comparison of two ready-to-use systems designed for sperm-hyaluronic acid binding selection before intracytoplasmic sperm injection: PICSi vs. Sperm Slow: a prospective, randomized trial. *Fertil Steril* 98:632-7.
21. RT Schulte, YK Chung, DA Ohl, S Takayama. Microfluidic sperm sorting device provides a novel method for selecting motile sperm with higher DNA integrity. *Fertil Steril*; 88, Suppl 1 S76 (2007)
22. Berkovitz A, Eltes F, Yaari S, Katz N, Barr I, Fishman A, Bartoov B. The morphological normalcy of the sperm nucleus and pregnancy rate of intracytoplasmic injection with morphologically selected sperm. *Hum Reprod*;20, 185-90 (2005)
23. Tummon IS, Gore-Langton RE, Daniel SA, Squires PM, Koval JJ, Alsalili MB, Martin JS, Kaplan BR, Nisker JA, Yuzpe A. A Randomized trial of partial zona dissection for male infertility. *Fertil Steril*; 63, 842-48 (1995)
24. Chan PJ, Jacobson JD, Corselli JU, Patton WC. A simple zeta method for sperm selection based on membrane charge *Steril.*;85:481-6 (2006)
25. Said TM, Agarwal A, Zborowski M, Grunewald S, Glander HJ, Paasch U Utility of magnetic cell separation as a molecular sperm preparation technique. *J Androl.*;29:134-42 (2008)
26. Rossato M, Di Virgilio F, Foresta C.. Involvement of osmo-sensitive calcium influx in human sperm activation *Hum Reprod.* 1996; 2, 903-9 (1996)
27. Aktan, T.M., Montag, M., Duman, S., Gorkemli, H., Rink, K. and Yurdakul, T. Use of a laser to detect viable but immotile spermatozoa. *Andrologia* 36:366-9. (2004)
28. Castillo J, Jodar M, Oliva R. The contribution of human sperm proteins to the development and epigenome of the preimplantation embryo. *Hum Reprod Update*;24:535-555 (2018)
29. Uluğ U, Bener F, Karagenc L, Ciray N, Bahceci M. Outcomes in couples undergoing ICSI: comparison between fresh and frozen-thawed surgically retrieved spermatozoa *J Androl.*;28:343-9 (2005)
30. Karacan M, Alwaeely F, Erkan S, Çebi Z, Berberoğlul M, Batukan M, Uluğ M, Arvas A, Çamlıbel T. *Fertil Steril.*100:975-80 (2013)
31. Tanaka A, Suzuki K, Nagayoshi M, Tanaka A, Takemoto Y, Watanabe S, Takeda S, Irahara M, Kuji N, Yamagata Z, Yanagimachi R. Ninety babies born after round spermatid injection into oocytes: survey of their development from fertilization to 2 years of age *Steril.* 2018 Aug;110 (3):443-451