

Bölüm 5

ÜROLOJİDE EKSTRAKORPOREAL ŞOK DALGA TEDAVİSİ (ESWT) KULLANIMI

Abubekir BÖYÜK¹

GİRİŞ

Vücut dışı şok dalgası tedavisi (Extracorporeal Shock Wave Therapy -ESWT) kullanımının tarihine bakıldığında, ilk olarak 1950 sonrasında ultrason dalgası kullanılarak tedaviler denenmiştir. Takip eden dekadlarda da şok dalgasının, doku üzerindeki uyarıya bağlı etkileri anlaşıldıkça üroloji, androloji, ortopedi, kardiyoloji, yara iyileşmesi ve spinal kord yaralanmaları gibi birçok alanda kullanımı yaygınlaşmaya başlamıştır (1).

Şok dalgaları basınçlı ses dalgaları olup bu dalgaların odağına getirilen alanda çeşitli reaksiyonlar göstererek hedeflenen alanda ses dalgalarının enerji yoğunluğuna göre destrüktif (taş kırılması gibi), antienflamatuar ya da anjiyojenik etkilerinin olduğu düşünülmektedir (2).

ESWT üroloji alanındaki birçok hastalıkta son yıllarda popüler tedavi yöntemi olarak kullanılmaktadır. Bu yazıda şok dalga tedavisinin üroloji pratiğinde kullanıldığı hastalıklardaki etki mekanizması ve tedavi başarısından bahsedilecektir.

¹ Üroloji Uzmanı, Beylikdüzü Kolan Hastanesi, Üroloji Kliniği, Türkiye, dr_bekirr@hotmail.com

anlamli düzelme saptanırken, ESWT grubunda bunlara ek olarak işeme hızında ve IPSS'te de anlamli düzelme olduğunu belirtmişlerdir. Hastaların 12. haftadaki kontrollerinde ise ESWT grubunda CPSI ve ağrı skorundaki gelişmenin diğer gruba göre daha fazla olduğu vurgulanmıştır (37). Yuan ve arkadaşları ise 5 randomize kontrollü çalışmayı değerlendirdikleri meta-analizde 12 haftalık takipte ESWT uygulanan KPAS hastalarında 12. Hafta takiplerinde CPSI, ağrı ve yaşam kalitesi skorlarında istatistiksel düzelme olduğu, ancak 24. Hafta takiplerinde skorların kontrol gruplarına göre benzer olduklarını belirtmişlerdir (38). Avrupa klavuzunda da ESWT'nin KPAS hastalarında kısa vadede etkili olduğu yüksek kanıt düzeyinde (Kanıt düzeyi 1b) belirtilmiştir (39).

SONUÇ

KPAS hastalarında mevcut tedavilere alternatif olarak şok dalga tedavisinin de düşünölebileceđi; etkisinin kısa vadede umut verici olmasına karşın uzun vadedeki etkileri bilinmediğinden uzun takip süreli ve hasta sayısının daha fazla olduğu randomize kontrollü çalışmalara ihtiyaç olduğu akılda tutulmalıdır.

KAYNAKLAR

1. Vincent KCS, d'Agostino MC. History of Shockwave Treatment and Its Basic Principles. Shockwave Medicine. 6. Basel: Karger; 2018. p. 1-16.
2. Özyalvaçlı ME, Metin A. Ekstrakorporeal şok dalga tedavisinin androlojideki yeri. 2016;18(65):74-8.
3. Chaussy C, Schüller J, Schmiedt E, Brandl H, Jocham D, Liedl B. Extracorporeal shock-wave lithotripsy (ESWL) for treatment of urolithiasis. Urology. 1984;23(5 Spec No):59-66. Epub 1984/05/01. doi: 10.1016/0090-4295(84)90243-7. PubMed PMID: 6719681.
4. Putman SS, Hamilton BD, Johnson DB. The use of shock wave lithotripsy for renal calculi. Current opinion in urology. 2004;14(2):117-21. Epub 2004/04/13. doi: 10.1097/00042307-200403000-00012. PubMed PMID: 15075841.
5. Lingeman JE, Kim SC, Kuo RL, McAteer JA, Evan AP. Shockwave lithotripsy: anecdotes and insights. Journal of endourology. 2003;17(9):687-93. Epub 2003/12/04. doi: 10.1089/089277903770802191. PubMed PMID: 14642025.
6. Horuz R, Albayrak S. SWLde Enerji Kaynakları ve Taş Kıırma Aletlerindeki Teknolojik Gelişmeler. In: Çaşkurlu T, editor. Üriner Sistem Taş Hastalığının Tedavisi. 1. İstanbul: Turkish Association of Urology; 2015. p. 69-76.
7. Rassweiler JJ, Knoll T, Köhrmann K-U, McAteer JA, Lingeman JE, Cleveland RO, et al. Shock wave technology and application: an update. Eur Urol. 2011;59(5):784-96. Epub 2011/02/23. doi: 10.1016/j.eururo.2011.02.033. PubMed PMID: 21354696.

8. Türk C, Neisius A, Petrik A, Seitz C, Skolarikos A, Thomas K. EAU Guidelines on Urolithiasis. Amsterdam2020.
9. Li K, Lin T, Zhang C, Fan X, Xu K, Bi L, et al. Optimal frequency of shock wave lithotripsy in urolithiasis treatment: a systematic review and meta-analysis of randomized controlled trials. *The Journal of urology*. 2013;190(4):1260-7. Epub 2013/03/30. doi: 10.1016/j.juro.2013.03.075. PubMed PMID: 23538240.
10. Kang DH, Cho KS, Ham WS, Lee H, Kwon JK, Choi YD, et al. Comparison of High, Intermediate, and Low Frequency Shock Wave Lithotripsy for Urinary Tract Stone Disease: Systematic Review and Network Meta-Analysis. *PLoS One*. 2016;11(7):e0158661-e. doi: 10.1371/journal.pone.0158661. PubMed PMID: 27387279.
11. Chen K, Mi H, Xu G, Liu L, Sun X, Wang S, et al. The Efficacy and Safety of Tamsulosin Combined with Extracorporeal Shockwave Lithotripsy for Urolithiasis: A Systematic Review and Meta-Analysis of Randomized Controlled Trials. *Journal of endourology*. 2015;29(10):1166-76. Epub 2015/04/29. doi: 10.1089/end.2015.0098. PubMed PMID: 25915454.
12. Alexander CE, Gowland S, Cadwallader J, Reynard JM, Turney BW. Shock wave lithotripsy (SWL): outcomes from a national SWL database in New Zealand. *BJU international*. 2016;117 Suppl 4:76-81. Epub 2016/03/01. doi: 10.1111/bju.13431. PubMed PMID: 26923107.
13. Chung DY, Kang DH, Cho KS, Jeong WS, Jung HD, Kwon JK, et al. Comparison of stone-free rates following shock wave lithotripsy, percutaneous nephrolithotomy, and retrograde intrarenal surgery for treatment of renal stones: A systematic review and network meta-analysis. *PLoS One*. 2019;14(2):e0211316-e. doi: 10.1371/journal.pone.0211316. PubMed PMID: 30789937.
14. Fankhauser CD, Hermanns T, Lieger L, Diethelm O, Umbehr M, Luginbühl T, et al. Extracorporeal shock wave lithotripsy versus flexible ureterorenoscopy in the treatment of untreated renal calculi. *Clin Kidney J*. 2018;11(3):364-9. Epub 2018/07/12. doi: 10.1093/ckj/sfx151. PubMed PMID: 29992018; PubMed Central PMCID: PMC6007408.
15. Nielsen TK, Jensen JB. Efficacy of commercialised extracorporeal shock wave lithotripsy service: a review of 589 renal stones. *BMC Urol*. 2017;17(1):59-. doi: 10.1186/s12894-017-0249-8. PubMed PMID: 28750620.
16. Chung VY, Turney BW. The success of shock wave lithotripsy (SWL) in treating moderate-sized (10-20 mm) renal stones. *Urolithiasis*. 2016;44(5):441-4. Epub 2016/01/09. doi: 10.1007/s00240-015-0857-2. PubMed PMID: 26743071.
17. Khalil M. Management of impacted proximal ureteral stone: Extracorporeal shock wave lithotripsy versus ureteroscopy with holmium: YAG laser lithotripsy. *Urology annals*. 2013;5(2):88-92. Epub 2013/06/27. doi: 10.4103/0974-7796.110004. PubMed PMID: 23798864; PubMed Central PMCID: PMC603685752.
18. Kumar A, Nanda B, Kumar N, Kumar R, Vasudeva P, Mohanty NK. A prospective randomized comparison between shockwave lithotripsy and semirigid ureteroscopy for upper ureteral stones <2 cm: a single center experience. *Journal of endourology*. 2015;29(1):47-51. Epub 2013/08/07. doi: 10.1089/end.2012.0493. PubMed PMID: 23914770.
19. Ozturk MD, Sener NC, Goktug HN, Gucuk A, Nalbant I, Imamoglu MA. The comparison of laparoscopy, shock wave lithotripsy and retrograde intrarenal surgery for large proximal ureteral stones. *Canadian Urological Association journal = Journal de l'Association des urologues du Canada*. 2013;7(11-12):E673-6. Epub 2013/11/28. doi: 10.5489/auaj.346. PubMed PMID: 24282455; PubMed Central PMCID: PMC603840519.
20. Valladales-Restrepo LF, Machado-Alba JE. Pharmacological treatment and inappropriate prescriptions for patients with erectile dysfunction. *Int J Clin Pharm*. 2020. Epub 2020/11/13. doi: 10.1007/s11096-020-01194-y. PubMed PMID: 33180231.

21. Lue TF. Physiology of Penile Erection and Pathophysiology of Erectile Dysfunction. In: Wein AJ, editor. *Campbell-Walsh Urology*. 1. 11 ed. China: Elsevier; 2016. p. 612-42.
22. Burnett AL. Evaluation and Management of Erectile Dysfunction. In: Wein AJ, editor. *Evaluation and Management of Erectile Dysfunction*. 1. 11 ed. China: Elsevier; 2016. p. 643-68.
23. Vardi Y, Appel B, Jacob G, Massarwi O, Gruenwald I. Can low-intensity extracorporeal shockwave therapy improve erectile function? A 6-month follow-up pilot study in patients with organic erectile dysfunction. *Eur Urol*. 2010;58(2):243-8. Epub 2010/05/11. doi: 10.1016/j.eururo.2010.04.004. PubMed PMID: 20451317.
24. Gruenwald I, Appel B, Vardi Y. Low-intensity extracorporeal shock wave therapy--a novel effective treatment for erectile dysfunction in severe ED patients who respond poorly to PDE5 inhibitor therapy. *The journal of sexual medicine*. 2012;9(1):259-64. Epub 2011/10/20. doi: 10.1111/j.1743-6109.2011.02498.x. PubMed PMID: 22008059.
25. Kitrey ND, Gruenwald I, Appel B, Shechter A, Massarwa O, Vardi Y. Penile Low Intensity Shock Wave Treatment is Able to Shift PDE5i Nonresponders to Responders: A Double-Blind, Sham Controlled Study. *The Journal of urology*. 2016;195(5):1550-5. Epub 2015/12/24. doi: 10.1016/j.juro.2015.12.049. PubMed PMID: 26694904.
26. Young Academic Urologists Men's Health G, Fode M, Hatzichristodoulou G, Serefoglu EC, Verze P, Albersen M. Low-intensity shockwave therapy for erectile dysfunction: is the evidence strong enough? *Nat Rev Urol*. 2017;14(10):593-606. Epub 2017/07/26. doi: 10.1038/nrurol.2017.119. PubMed PMID: 28741629.
27. Salonia A, Bettocchi C, Carvalho J, Corona G, Jones TH, Kadioglu A, et al. Management of Erectile Dysfunction. *EAU Guidelines on Sexual and Reproductive Health*. Amsterdam2020. p. 43-66.
28. Carson C. Peyronie's disease: new paradigm for the treatment of a unique cause of erectile dysfunction. *Postgrad Med*. 2020;1-5. Epub 2020/11/07. doi: 10.1080/00325481.2020.1805865. PubMed PMID: 33156731.
29. Skolarikos A, Alargof E, Rigas A, Deliveliotis C, Konstantinidis E. Shockwave therapy as first-line treatment for Peyronie's disease: a prospective study. *Journal of endourology*. 2005;19(1):11-4. Epub 2005/03/01. doi: 10.1089/end.2005.19.11. PubMed PMID: 15735375.
30. Salonia A, Bettocchi C, Carvalho J, Corona G, Jones TH, Kadioglu A, et al. Penile Curvature. *EAU guidelines on Sexual and Reproductive Health*. Amsterdam2020. p. 87-104.
31. Chitale S, Morsey M, Swift L, Sethia K. Limited shock wave therapy vs sham treatment in men with Peyronie's disease: results of a prospective randomized controlled double-blind trial. *BJU international*. 2010;106(9):1352-6. Epub 2010/05/05. doi: 10.1111/j.1464-410X.2010.09331.x. PubMed PMID: 20438568.
32. Hatzichristodoulou G, Meisner C, Gschwend JE, Stenzl A, Lahme S. Extracorporeal shock wave therapy in Peyronie's disease: results of a placebo-controlled, prospective, randomized, single-blind study. *The journal of sexual medicine*. 2013;10(11):2815-21. Epub 2013/08/01. doi: 10.1111/jsm.12275. PubMed PMID: 23898925.
33. Gao L, Qian S, Tang Z, Li J, Yuan J. A meta-analysis of extracorporeal shock wave therapy for Peyronie's disease. *Int J Impot Res*. 2016;28(5):161-6. Epub 2016/06/03. doi: 10.1038/ijir.2016.24. PubMed PMID: 27250868.
34. Li G, Chang D, Chen D, Zhang P, You Y, Huang X, et al. Efficacy of radial extracorporeal shock wave therapy for chronic prostatitis/chronic pelvic pain syndrome: A protocol for systematic review. *Medicine (Baltimore)*. 2020;99(44):e22981. Epub 2020/11/01. doi: 10.1097/MD.00000000000022981. PubMed PMID: 33126371; PubMed Central PMCID: PMC7598797.

35. Zimmermann R, Cumanas A, Miclea F, Janetschek G. Extracorporeal shock wave therapy for the treatment of chronic pelvic pain syndrome in males: a randomised, double-blind, placebo-controlled study. *Eur Urol.* 2009;56(3):418-24. Epub 2009/04/18. doi: 10.1016/j.eururo.2009.03.043. PubMed PMID: 19372000.
36. Vahdatpour B, Alizadeh F, Moayednia A, Emadi M, Khorami MH, Haghdani S. Efficacy of extracorporeal shock wave therapy for the treatment of chronic pelvic pain syndrome: a randomized, controlled trial. *ISRN Urol.* 2013;2013:972601. Epub 2013/09/04. doi: 10.1155/2013/972601. PubMed PMID: 24000311; PubMed Central PMCID: PMC3755541.
37. Rayegani SM, Razzaghi MR, Raeissadat SA, Allameh F, Eliaspour D, Abedi AR, et al. Extracorporeal Shockwave Therapy Combined with Drug Therapy in Chronic Pelvic Pain Syndrome : A Randomized Clinical Trial. *Urol J.* 2020;17(2):185-91. Epub 2019/04/21. doi: 10.22037/uj.v0i0.4673. PubMed PMID: 31004340.
38. Yuan P, Ma D, Zhang Y, Gao X, Liu Z, Li R, et al. Efficacy of low-intensity extracorporeal shock wave therapy for the treatment of chronic prostatitis/chronic pelvic pain syndrome: A systematic review and meta-analysis. *Neurourol Urodyn.* 2019;38(6):1457-66. Epub 2019/05/01. doi: 10.1002/nau.24017. PubMed PMID: 31037757.
39. Engeler D, Baranowski AP, Berghmans B, Borovicka J, Cottrell AM, Dinis-Oliveira P, et al. EAU Guideline on Chronic Pelvic Pain. Amsterdam2020.