Bölüm
31

TESTİS KANSERİNDE RADYOTERAPİ

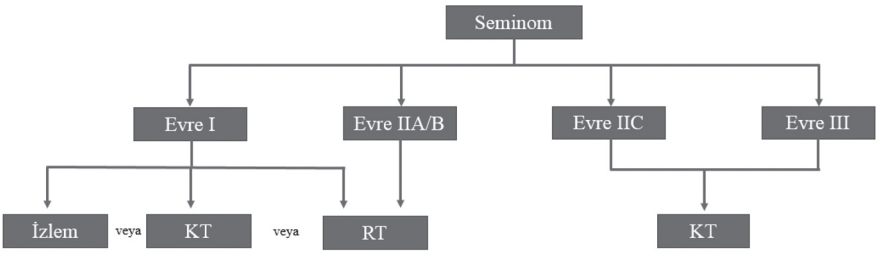
Serab UYAR[1]

GİRİŞ

Testis kanseri erkeklerdeki tüm malign tümörlerin % 1'ini oluşturur ve 15-35 yaş arasındaki erkeklerde en sık teşhis edilen malignitedir. Testis kanserlerinin % 95'inden fazlası germ hücreli tümörlerdir. 60 yaşından büyük erkeklerde en yaygın görülen testis kanseri seks kord-stromal tümörler ve lenfomalardır. Testis kanseri genellikle kür sağlanan bir hastalıktır. Dünya sağlık örgütü (DSÖ) 2016 yılında testis germ hücreli tümörler için önemli ölçüde farklı patogenezlerin var olduğu bir sınıflama yayınlayıp, germ hücre tümörlerini iki gruba ayırır: Germ hücreli neoplazi insitu (GCNIS) ve GCNIS olmayanlar (1). Evreleme American Joint Committee on Cancer (AJCC) 8. Baskı kriterlerine göre yapılır (2). İnmemiş testis öyküsü testis kanseri gelişimi için risk faktörüdür. Erkek infertilitesi, testis kanseri riskinin artmasıyla ilişkilidir ve anormal semen analizine sahip infertil erkeklerde 20 kat daha fazla testis kanseri riski vardır (3). Embriyoda testisler, lomber 2 vertebra yanında bulunan genital sırttan kaynaklanır. Lenfatik drenaj testisten inguinal kanalda spermatik kord damarlarıyla birlikte retroperitoneal lenf nodlarına (Torakal (T) 11-Lomber (L) 4 vertebra) çoğunlukla L1-3 seviyesinedir. Testis kanseri genellikle skrotumda ağrısız bir şişlik olarak ortaya çıkar. Testis kanserine yaklaşım; evreleme için skrotal ve testis muayenesi, serum tümör belirteçlerinin (α-fetoprotein (AFP), β-human koryonik gonadotropin (β-HCG) ve laktik dehidrogenaz (LDH)) ölçülmesi, görüntülemede skrotal ultrason (US), abdominopelvik ve toraks bilgisarlı tomografi (CT), gereklilik halinde pozitron emisyon tomografisi PET/CT ile yapılması ve ardından standart tedavi radikal orşiektomi yapılması şeklindedir.

[1] Uzm Dr., Sağılık Bilimleri Üniversitesi Dr Abdurrahman Yurtaslan Ankara Onkoloji Eğitim ve Araştırma Hastanesi, Radyasyon Onkolojisi, serabozbay@yahoo.com

ishal ve peptik ülser hastalığı 35 Gy altında <% 2'iden azdır. Skrotal kalkan kullanılan çoğu hastada 4 ay-1 yıl arasında oligospermi görülebilinir fakat RT sonrası % 30'u çocuk sahibi olabilir. Seminom için tedavi kararı hastayla tartışılarak tüm algoritmalar anlatılarak karar verilmelidir. Seminomda evrelere göre tedavi algoritması Şekil 3'de gösterilmiştir.



Şekil 3. Seminom evrelere göre tedavi algoritması

Anahtar Kelimeler: Testis kanseri, Seminom, Radyoterapi

KAYNAKÇA

1. Moch H., Cubilla A. L., Humphrey P. A., et al. The 2016 WHO Classification of Tumours of the Urinary System and Male Genital Organs-Part A: Renal, Penile, and Testicular Tumours. *Eur Urol*. 2016; *70*(1), 93-105. doi:10.1016/j.eururo.2016.02.029
2. American Joint Committee on Cancer. (2018). Testis. In *AJCC Cancer Staging Form Supplement* (8th ed., pp. 327-32). Chicago: American College of Surgeons.
3. Raman J. D., Nobert C. F. & Goldstein M. Increased incidence of testicular cancer in men presenting with infertility and abnormal semen analysis. *J Urol*. 2005; *174*(5), 1819-22; discussion 22. doi:10.1097/01.ju.0000177491.98461.aa
4. Albers P., Albrecht W., Algaba F., et al. Guidelines on Testicular Cancer: 2015 Update. *Eur Urol*. 2015; *68*(6), 1054-68. doi:10.1016/j.eururo.2015.07.044
5. Choo R., Thomas G., Woo T., et al. Long-term outcome of postorchiectomy surveillance for Stage I testicular seminoma. *Int J Radiat Oncol Biol Phys*. 2005; *61*(3), 736-40. doi:10.1016/j.ijrobp.2004.06.209
6. Chung P., Parker C., Panzarella T., et al. Surveillance in stage I testicular seminoma - risk of late relapse. *Can J Urol*. 2002; *9*(5), 1637-40.
7. Cummins S., Yau T., Huddart R., et al. Surveillance in stage I seminoma patients: a long-term assessment. *Eur Urol*. 2010; *57*(4), 673-8. doi:10.1016/j.eururo.2009.06.006
8. Daugaard G., Petersen P. M. & Rorth M. Surveillance in stage I testicular cancer. *APMIS*. 2003; *111*(1), 76-83; discussion -5.
9. Francis R., Bower M., Brunstrom G., et al. Surveillance for stage I testicular germ cell tumours: results and cost benefit analysis of management options. *Eur J Cancer*. 2000; *36*(15), 1925-32. doi:10.1016/s0959-8049(00)00140-4
10. Kamba T., Kamoto T., Okubo K., et al. Outcome of different post-orchiectomy management for stage I seminoma: Japanese multi-institutional study including 425 patients. *Int J Urol*. 2010; *17*(12), 980-7. doi:10.1111/j.1442-2042.2010.02645.x
11. Kollmannsberger C., Tyldesley S., Moore C., et al. Evolution in management of testicular seminoma: population-based outcomes with selective utilization of active therapies. *Ann Oncol*. 2011; *22*(4), 808-14. doi:10.1093/annonc/mdq466

12. Tandstad T., Smaaland R., Solberg A., et al. Management of seminomatous testicular cancer: a binational prospective population-based study from the Swedish norwegian testicular cancer study group. *J Clin Oncol*. 2011; *29*(6), 719-25. doi:10.1200/JCO.2010.30.1044
13. Aparicio J., Germa J. R., Garcia del Muro X., et al. Risk-adapted management for patients with clinical stage I seminoma: the Second Spanish Germ Cell Cancer Cooperative Group study. *J Clin Oncol*. 2005; *23*(34), 8717-23. doi:10.1200/JCO.2005.01.9810
14. von der Maase H., Specht L., Jacobsen G. K., et al. Surveillance following orchidectomy for stage I seminoma of the testis. *Eur J Cancer*. 1993; *29A*(14), 1931-4. doi:10.1016/0959-8049(93)90446-m
15. Mead G. M., Fossa S. D., Oliver R. T., et al. Randomized trials in 2466 patients with stage I seminoma: patterns of relapse and follow-up. *J Natl Cancer Inst*. 2011; *103*(3), 241-9. doi:10.1093/jnci/djq525
16. Bauman G. S., Venkatesan V. M., Ago C. T., et al. Postoperative radiotherapy for Stage I/II seminoma: results for 212 patients. *Int J Radiat Oncol Biol Phys*. 1998; *42*(2), 313-7. doi:10.1016/s0360-3016(98)00227-2
17. Bruns F., Bremer M., Meyer A., et al. Adjuvant radiotherapy in stage I seminoma: is there a role for further reduction of treatment volume? *Acta Oncol*. 2005; *44*(2), 142-8. doi:10.1080/02841860510029581
18. Classen J., Schmidberger H., Meisner C., et al. Para-aortic irradiation for stage I testicular seminoma: results of a prospective study in 675 patients. A trial of the German testicular cancer study group (GTCSG). *Br J Cancer*. 2004; *90*(12), 2305-11. doi:10.1038/sj.bjc.6601867
19. Fossa S. D., Aass N. & Kaalhus O. Radiotherapy for testicular seminoma stage I: treatment results and long-term post-irradiation morbidity in 365 patients. *Int J Radiat Oncol Biol Phys*. 1989; *16*(2), 383-8. doi:10.1016/0360-3016(89)90334-9
20. Fossa S. D., Horwich A., Russell J. M., et al. Optimal planning target volume for stage I testicular seminoma: A Medical Research Council randomized trial. Medical Research Council Testicular Tumor Working Group. *J Clin Oncol*. 1999; *17*(4), 1146. doi:10.1200/JCO.1999.17.4.1146
21. Jones W. G., Fossa S. D., Mead G. M., et al. Randomized trial of 30 versus 20 Gy in the adjuvant treatment of stage I Testicular Seminoma: a report on Medical Research Council Trial TE18, European Organisation for the Research and Treatment of Cancer Trial 30942 (ISRCTN18525328). *J Clin Oncol*. 2005; *23*(6), 1200-8. doi:10.1200/JCO.2005.08.003
22. Logue J. P., Harris M. A., Livsey J. E., et al. Short course para-aortic radiation for stage I seminoma of the testis. *Int J Radiat Oncol Biol Phys*. 2003; *57*(5), 1304-9. doi:10.1016/s0360-3016(03)00754-5
23. Melchior D., Hammer P., Fimmers R., et al. Long term results and morbidity of paraaortic compared with paraaortic and iliac adjuvant radiation in clinical stage I seminoma. *Anticancer Res*. 2001; *21*(4B), 2989-93.
24. Niazi T. M., Souhami L., Sultanem K., et al. Long-term results of para-aortic irradiation for patients with stage I seminoma of the testis. *Int J Radiat Oncol Biol Phys*. 2005; *61*(3), 741-4. doi:10.1016/j.ijrobp.2004.06.247
25. Oliver R. T., Mead G. M., Rustin G. J., et al. Randomized trial of carboplatin versus radiotherapy for stage I seminoma: mature results on relapse and contralateral testis cancer rates in MRC TE19/EORTC 30982 study (ISRCTN27163214). *J Clin Oncol*. 2011; *29*(8), 957-62. doi:10.1200/JCO.2009.26.4655
26. Santoni R., Barbera F., Bertoni F., et al. Stage I seminoma of the testis: a bi-institutional retrospective analysis of patients treated with radiation therapy only. *BJU Int*. 2003; *92*(1), 47-52; discussion
27. Livsey J. E., Taylor B., Mobarek N., et al. Patterns of Relapse Following Radiotherapy for Stage I Seminoma of the Tests: Implications for Follow-up. *Clinical Oncology*. 2001; *13*(4), 296-300.
28. Paly J. J., Efstathiou J. A., Hedgire S. S., et al. Mapping patterns of nodal metastases in seminoma: Rethinking radiotherapy fields. *Radiotherapy and Oncology*. 2013; *106*(1), 64-8. doi:10.1016/j.radonc.2012.12.002
29. Oliver R. T., Mason M. D., Mead G. M., et al. Radiotherapy versus single-dose carboplatin in

adjuvant treatment of stage I seminoma: a randomised trial. *Lancet*. 2005; *366*(9482), 293-300. doi:10.1016/S0140-6736(05)66984-X
30. Zagars G. K., Ballo M. T., Lee A. K., et al. Mortality after cure of testicular seminoma. *J Clin Oncol*. 2004; *22*(4), 640-7. doi:10.1200/JCO.2004.05.205
31. Beard C. J., Travis L. B., Chen M. H., et al. Outcomes in stage I testicular seminoma: a population-based study of 9193 patients. *Cancer*. 2013; *119*(15), 2771-7. doi:10.1002/cncr.28086
32. van den Belt-Dusebout A. W., de Wit R., Gietema J. A., et al. Treatment-specific risks of second malignancies and cardiovascular disease in 5-year survivors of testicular cancer. *J Clin Oncol*. 2007; *25*(28), 4370-8. doi:10.1200/JCO.2006.10.5296
33. Travis L. B., Fossa S. D., Schonfeld S. J., et al. Second cancers among 40,576 testicular cancer patients: focus on long-term survivors. *J Natl Cancer Inst*. 2005; *97*(18), 1354-65. doi:10.1093/jnci/dji278
34. Robinson D., Moller H. & Horwich A. Mortality and incidence of second cancers following treatment for testicular cancer. *Br J Cancer*. 2007; *96*(3), 529-33. doi:10.1038/sj.bjc.6603589
35. Huddart R. A., Norman A., Shahidi M., et al. Cardiovascular disease as a long-term complication of treatment for testicular cancer. *J Clin Oncol*. 2003; *21*(8), 1513-23. doi:10.1200/JCO.2003.04.173
36. Albers P., Albrecht W., Algaba F., et al. (2018). Adjuvant radiotherapy and risk-adapted treatment. In *EAU Guidelines on Testicular Cancer*: European Association of Urology.
37. Wilder R. B., Buyyounouski M. K., Efstathiou J. A., et al. Radiotherapy Treatment Planning for Testicular Seminoma. *Int J Radiat Oncol*. 2012; *83*(4), E445-E52. doi:10.1016/j.ijrobp.2012.01.044
38. Zilli T., Boudreau C., Doucet R., et al. Bone marrow-sparing intensity-modulated radiation therapy for Stage I seminoma. *Acta Oncol*. 2011; *50*(4), 555-62. doi:10.3109/0284186X.2011.564650
39. Chung P. W., Gospodarowicz M. K., Panzarella T., et al. Stage II testicular seminoma: patterns of recurrence and outcome of treatment. *Eur Urol*. 2004; *45*(6), 754-59; discussion 9-60. doi:10.1016/j.eururo.2004.01.020
40. Hallemeier C. L., Pisansky T. M., Davis B. J., et al. Long-term outcomes of radiotherapy for stage II testicular seminoma--the Mayo Clinic experience. *Urol Oncol*. 2013; *31*(8), 1832-8. doi:10.1016/j.urolonc.2012.03.010
41. Classen J., Schmidberger H., Meisner C., et al. Radiotherapy for stages IIA/B testicular seminoma: final report of a prospective multicenter clinical trial. *J Clin Oncol*. 2003; *21*(6), 1101-6. doi:10.1200/JCO.2003.06.065
42. Giannatempo P., Greco T., Mariani L., et al. Radiotherapy or chemotherapy for clinical stage IIA and IIB seminoma: a systematic review and meta-analysis of patient outcomes. *Ann Oncol*. 2015; *26*(4), 657-68. doi:10.1093/annonc/mdu447
43. Schmidberger H., Bamberg M., Meisner C., et al. Radiotherapy in Stage IIA and IIB testicular seminoma with reduced portals: A prospective multicenter study. *Int J Radiat Oncol*. 1997; *39*(2), 321-6. doi:10.1016/s0360-3016(97)00155-7
44. Shih H. A., Harisinghani M., Zietman A. L., et al. Mapping of nodal disease in locally advanced prostate cancer: rethinking the clinical target volume for pelvic nodal irradiation based on vascular rather than bony anatomy. *Int J Radiat Oncol Biol Phys*. 2005; *63*(4), 1262-9. doi:10.1016/j.ijrobp.2005.07.952
45. Hall E. J. & Wuu C. S. Radiation-induced second cancers: the impact of 3D-CRT and IMRT. *Int J Radiat Oncol Biol Phys*. 2003; *56*(1), 83-8. doi:10.1016/s0360-3016(03)00073-7