

## Tiroid Kanserlerinde Eksternal Radyoterapi

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### Özet

Tiroid kanserleri en sık görülen endokrin malignitelere dir. Kadınlarda daha sık görülür ve mortalite erkeklerde daha yüksektir. Dünyada kadınlar arasında görülen en sık sekizinci kanser türüdür ve 45 yaşın altındaki kadınlar arasında da en yaygın üçüncü kanser türüdür.

Tiroid kanserlerinin %90'ı folliküler epitelden kaynaklanır ve iyi diferansiye (Papiller, Folliküler, Hürthle), kötü diferansiye (Anaplastik) ve Medüller olmak üzere üç tipe sınıflandırılırlar. En sık papiller tiroid kanserleri görülür. Klinik olarak çoğu vaka asemptomatiktir ve tesadüfen tanı konulur. Tiroid kanserlerinin temel tedavisi cerrahidir. Cerrahi sonrası yüksek riskli hastalarda adjuvan olarak öncelikle radyoaktif iyot (RAI) tedavisi uygulanır, ek olarak radyoterapi (RT) uygulanabilir.

Tiroid kanserlerinde Eksternal radyoterapi (EBRT) adjuvan, primer veya palyatif amaçla ve üç boyutlu konformal radyoterapi (3-BKRT), yoğunluk ayarlı radyoterapi (YART-IMRT), Volumetrik ark tedavisi (V-MAT), Tomoterapi (Helikal YART-IMRT), SBRT (Stereotaktik Vücut Radyoterapisi) ve SRS (Stereotaktik Radyocerrahi) gibi tekniklerle uygulanmaktadır.

Lokalize diferansiye tiroid kanserlerinin tedavisinde ana tedavi modaliteleri cerrahi, RAI tedavisi ve TSH baskılama tedavileridir. Bu hasta grubunda EBRT'nin değerlendirildiği kanıt düzeyi yüksek çalışmalar bulunmamaktadır. Retrospektif serilerin verilerine dayanarak ana tedavi modalitelerinin uygulanmadığı hastalarda primer tedavi olarak, mikroskopik rezidü hastalığı ya da nüks riski yüksek olan seçilmiş olgularda adjuvan tedavi olarak, nüks hastalarda salvaj cerrahi ve RAI tedavileri uygulanıyorsa kurtarma tedavisi olarak EBRT uygulanabilir. Kılavuzlarda nüks hastalığa yaklaşımda EBRT, RAI tedavisine refrakter ve ek cerrahinin etkili olmayacağı hastalarda önerilmektedir.

Sonuç olarak, EBRT tiroid kanserlerinin tedavisinde histopatolojik tipe göre farklı şemalarda uygulanabilir, bununla birlikte hastanın tedavi şemasının başlangıçta multidisipliner yaklaşımla belirlenmesi gerekmektedir.

olan seçilmiş olgularda adjuvan tedavi olarak, nüks hastalarda salvaj cerrahi ve RAI tedavileri uygulanamıyorsa kurtarma tedavisi olarak uygulanabilir. Ayrıca EBRT, rezeke edilemeyen lokal ileri hastalıkta, cerrahi sonrası nüks beklenen büyük ekstrasitroidal uzanımı olan vakalarda, cerrahi marjini pozitif olanlarda, servikal ve mediastinal

lenf nod tutulumu, T3 veya T4 hastalık ve ekstra nodal yayılım durumlarında uygulanmaktadır. ATK'nin EBRT uygulamasında hipofraksiyone ve eşzamanlı kemoradyoterapi şemaları tercih edilmelidir. Hastanın tedavi şemasının başlangıçta multidisipliner yaklaşımla belirlenmesi gerekmektedir.

## Kaynaklar

- Kitahara CM, Schneider AB, Brenner AV, et al. eds. Thyroid cancer. *Cancer Epidemiology and Prevention*. 4th ed. New York, Oxford University Press. 2018.p.839-860.
- Kohler BA, Sherman RL, Howlander N, et al. Annual Report to the Nation on the Status of Cancer, 1975–2011. Featuring incidence of breast cancer subtypes by race/ethnicity, poverty, and state. *J Natl Cancer Inst*, 2015;107 (6).
- Siegel RL, Miller KD, Jemal A. *Cancer statistics, 2018*. *CA Cancer J Clin*. 2018;68(1):7-30.
- Türkiye Sağlık İstatistikleri Yıllığı 2017. p.39-40.
- Won HR, Chang JW, Kang YE, et al. Optimal extent of lateral neck dissection for well-differentiated thyroid carcinoma with metastatic lateral neck lymph nodes: A systematic review and meta-analysis. *Oral Oncol*. 2018;87:117-125.
- McNamara WF, Wang LY, Palmer FL, et al. Pattern of neck recurrence after lateral neck dissection for cervical metastases in papillary thyroid cancer. *Surgery*. 2016;159(6):1565-1571.
- Amin MB, Edge S, Greene F, et al. *AJCC Cancer Staging Manual*. 8th ed. New York, NY, Springer 2017.
- Hay ID, McConahey WM, Goellner JR. Managing patients with papillary thyroid carcinoma: Insights gained from the mayo clinic's experience of treating 2,512 consecutive patients during 1940 through 2000. *Trans Am Clin Climatol Assoc* 2002;113:241–260.
- NCCN Clinical Practice Guidelines in Oncology, Thyroid Carcinoma; version 3. 2018-December 20, 2018.
- Mitchell AL, Gandhi A, Scott-Coombes D, et al. Management of thyroid cancer: United Kingdom National Multidisciplinary Guidelines. *J Laryngol Otol*. 2016;130 (S2):S150-S160.
- Pacini F, Schlumberger M, Dralle H F, et al. European consensus for the management of patients with differentiated thyroid carcinoma of the follicular epithelium. *Eur J Endocrinol* 2006 Jun;154(6):787-803.
- Mangoni M, Gobitti C, Autorino R, et al. External Beam Radiotherapy in Thyroid Carcinoma: Clinical Review and Recommendations of the AIRO “Radioterapia Metabolica” Group. *Tumori* 2016;103(2):114-23.
- Haugen BR, Alexander EK, Bible KC, et al. 2015 American Thyroid Association Management Guidelines for Adult Patients with Thyroid Nodules and Differentiated Thyroid Cancer: The American Thyroid Association Guidelines Task Force on Thyroid Nodules and Differentiated Thyroid Cancer. *Thyroid* 2016;26 (1):1-133.
- Wu XL, Hu YH, Li QH, et al. Value of postoperative radiotherapy for thyroid cancer. *Head Neck Surg* 1987;10(2):107-12
- Chow SM, Law SC, Mendenhall WM, et al. Papillary thyroid carcinoma: prognostic factors and the role of radioiodine and external radiotherapy. *Int J Radiat Oncol Biol Phys* 2002;52(3):784-95.
- Romesser PB, Sherman EJ, Shaha AR, et al. External beam radiotherapy with or without concurrent chemotherapy in advanced or recurrent non-anaplastic non-medullary thyroid cancer. *J Surg Oncol* 2014;110(4):375-82.
- Schwartz DL, Lobo MJ, Ang KK, et al. Postoperative external beam radiotherapy for differentiated thyroid cancer: outcomes and morbidity with conforml treatment. *Int J Radiat Oncol Biol Phys* 2009;74(4):1083-91.
- Azrif M, Slevin NJ, Sykes AJ, et al. Patterns of relapse following radiotherapy for differentiated thyroid cancer: implication for target volume delineation. *Radiother Oncol* 2008;89(1):105-13.
- British Thyroid Association Guidelines for the management of thyroid cancer. July, 2014 <https://onlinelibrary.wiley.com/doi/pdf/10.1111/cen.12515>.
- Brierley JD, Tsang RW. External beam radiation therapy for thyroid cancer. *Endocrinol Metab Clin North Am* 2008;37(2):497-509.
- Farahati J, Reiners C, Stuschke M, et al. Differentiated thyroid cancer. Impact of adjuvant external radiotherapy in patients with perithyroidal tumor infiltration (stage pT4). *Cancer* 1996;77(1):172-80.
- Brierley J, Tsang R, Panzarella T, et al. Prognostic factors and the effect of treatment with radioactive iodine and external beam radiation on patients with differentiated thyroid cancer seen at a single institution over 40 years. *Clin Endocrinol (Oxf)* 2005;63(4):418-27.
- Amdur RJ, Dagan R. The University of Florida Department of Radiation Oncology Guidelines for Treatment of Differentiated Thyroid Cancer With I-131 or External-beam Radiotherapy. *Am J Clin Oncol* 2019;42(1):92-98.
- Greenblatt DY, Elson D, Mack E, et al. Initial lymph node dissection increases cure rates in patients with medullary thyroid cancer. *Asian J Surg* 2007;30:108–112.
- Grozinsky-Glasberg S, Benbassat CA, Tsvetov G, et al. Medullary thyroid cancer: a retrospective analysis of a cohort treated at a single tertiary care center between 1970 and 2005. *Thyroid* 2007;17:549–556.
- Fife KM, Bower M, Harmer CL. Medullary thyroid cancer: the role

- of radiotherapy in local control. *Eur J Surg Oncol* 1996;22(6):588-91.
27. Brierley J, Tsang R, Simpson WJ. Medullary thyroid cancer: analyses of survival and prognostic factors and the role of radiation therapy in local control. *Thyroid* 1996;6 (4):305-10.
  28. Martinez SR, Beal SH, Chen A, et al. Adjuvant external beam radiation for medullary thyroid carcinoma. *J Surg Oncol* 2010;102(2):175-8.
  29. Call JA, Caudill JS, McIver B, et al. A role for radiotherapy in the management of advanced medullary thyroid carcinoma: the mayo clinic experience. *Rare Tumors* 2013;5(3):37.
  30. Schwartz DL, Rana V, Shaw S et al. Postoperative radiotherapy for advanced medullary thyroid cancer - local disease control in the modern era. *Head Neck* 2008;30(7):883-8.
  31. Hundahl SA, Fleming ID, Fremgen AM, et al. A National Cancer Data Base report 53,856 cases of thyroid cancer treated in U.S. *Cancer* 1998;83:2638-48.
  32. Voutilainen PE, Multanen M, Hapapiainen NK et al. Anaplastic thyroid carcinoma survival. *World J Surg* 1999;23(9):975-8.
  33. Haymart MR, Banerjee M, Yin H et al. Marginal treatment benefit in anaplastic thyroid cancer. *Cancer* 2013;119(17):3133-9.
  34. Chen J, Tward JD, Shireve DC, et al. Surgery and radiotherapy improves survival in patients with anaplastic thyroid carcinoma: analysis of the surveillance, epidemiology, and end results. *Am J Clin Oncol* 2008;31:460-4.
  35. Chapman TR, Laramore GE, Bowen SR, et al. The Treatment of Thyroid Cancer With Fast Neutron Radiation Therapy: A 30-Year Institutional Experience. *International Journal of Radiation Oncology Biology Physics*. November 1, 2015, Volume 93, Issue 3, Supplement, p.E322-2800.
  36. Mitchell G, Huddart R, Harmer C. Phase II evaluation of high dose accelerated radiotherapy for anaplastic thyroid carcinoma. *Radiother Oncol* 1999;50(1):33-8.
  37. He X, Li D, Hu C, et al. Outcome after intensity modulated radiotherapy for anaplastic thyroid carcinoma. *BMC Cancer* 2014;14:235.
  38. Tennvall J, Lundell G, Hallquist A, et al. Combined doxorubicin, hyperfractionated radiotherapy and surgery in anaplastic thyroid carcinoma. Report on two protocols. The Swedish Anaplastic Thyroid Cancer Group. *Cancer* 1994;74:1348-54.
  39. Sherman EJ, Lim SH, Ho AL, et al. Concurrent doxorubicin and radiotherapy for anaplastic thyroid cancer: a critical re-evaluation including uniform pathologic review. *Radiother Oncol* 2011;101:425-30.
  40. Swaak-Kragten AT, de Wilt JH, Schmitz PI, et al. Multimodality treatment for anaplastic thyroid carcinoma treatment outcome in 75 patients. *Radiother Oncol* 2009;92:100-104.
  41. Troch M, Koperek O, Scheuba C, et al. High efficacy of concomitant treatment of undifferentiated (anaplastic) thyroid cancer with radiation and docetaxel. *J Clin Endocrinol Metab* 2010;95:E54-E57
  42. A randomised phase II study of concurrent intensity modulated radiation therapy (IMRT), paclitaxel and pazopanib (NSC 737754)/placebo, for the treatment of anaplastic thyroid cancer 2009 RTOG 0912 ( on the internet)
  43. Edward C. Halperin, David E. Wazer, Carlos A. Perez and Luther W. Brady. *Perez & Brady's Principles and Practice of Radiation Oncology*, Seventh edition, Philadelphia, Wolters Kluwer; 2019;p.3540-3545
  44. Schulumberger M, Challeton C, De Vathaire F, et al. Radioactive iodine treatment and external radiotherapy for lung and bone metastases from thyroid carcinoma. *J Nucl Med* 1996;37(4):598-605.
  45. Proye CA, DromerDH, Carnaille BM, et al. Is it still worth while to treat bone metastases from differentiated thyroid carcinoma with radioactive iodine? *World J Surg* 1992;16:640.
  46. Brito JP, Hay ID, Foote RL. *Thyroid Cancer*. In: Gunderson LL, Tepper JE, eds. *Clinical Radiation Oncology*. 4th edition. Philadelphia. Elsevier; 2016. p.715-30.
  47. Ozyigit G, Chao KS. Clinical experience of head-and-neck cancer IMRT with serial tomotherapy. *Medical Dosimetry* 2002;27(2):91-98.
  48. Tubiana M, Haddad E, Schlumberger M, et al. External radiotherapy in thyroid cancers. *Cancer* 1985;55:2062-2071,
  49. Ford D, Giridharan S, McConkey C, et al. External beam radiotherapy in the management of differentiated thyroid cancer. *Clin Oncol (R Coll Radiol)* 2003;15(6):337-41.
  50. Meadows KM, Amdur RJ, Morris CG, et al: External beam radiotherapy for differentiated thyroid cancer. *Am J Otolaryngol* 2006;27:24-28.
  51. Romesser PB, Lee NY. *Thyroid Carcinoma*. In: Lee NY, Nadeem R, Lu JJ, eds. *Target Volume Delineation for Conformal and Intensity-Modulated Radiation Therapy*. Switzerland: Springer; 2015. p.103-14.
  52. Marks LB, Yorke ED, Jackson A, et al. Use of normal tissue complication probability models in the clinic. *Int J Radiat Oncol Biol Phys* 2010;76(3 Suppl):S10-9.
  53. Arora S, Christos P, Pham A, et al. Comparing outcomes in poorly-differentiated versus anaplastic thyroid cancers treated with radiation: surveillance, epidemiology and end results analysis. *J Cancer Res Ther* 2014;10(3):526-30.
  54. Smallridge RC, Copland JA. Anaplastic thyroid carcinoma: pathogenesis and emerging therapies. *Clin Oncol (R Coll Radiol)* 2010;22(6):486-97.