

14. BÖLÜM

PARATİROİD BEZİ TÜMÖRLERİNİN PATOLOJİK SINIFLAMALARI VE EVRELENDİRİLMESİ

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GİRİŞ

Dünya Sağlık Örgütü tarafından 2017 yılında yayınlanan verilere göre paratiroid tümörleri paratiroid adenomu, paratiroid karsinomu, sekonder, mezenkimal ve diğer tümörler olarak sınıflandırılmıştır (Tablo 1) (DeLellis, et al., 2017). Bu sınıflamada yer almamakla beraber, adenom ve karsinom arasında kalan ara olgular atipik adenom olarak tanı alırlar. Paratiroid bezinin gelişimi, lokalizasyonu ve histolojisinin bilinmesi bu tümörlerin histopatolojisini anlamada yardımcı olacaktır.

Tablo 1. Paratiroid bezi tümörlerinin WHO sınıflaması (2017)

Paratiroid karsinomu 8140/3

Paratiroid adenomu 8140/0

Sekonder, mezenkimal ve diğer tümörler

Embriyoloji Anatomi ve Histoloji

Paratiroid bezleri intrauterin 14. haftaya kadar histolojik olarak görülemez ancak gelişimi 5. haftada üç ve dördüncü brankial poşun dorsal endoderminin kalınlaşmasıyla başlar (Mallik, et al, 2017) (Grevellec & Tucker, 2010). Superior paratiroid bezler 4. poştan gelişir, aşağı doğru doku göçü sonlandığında genellikle tiroid bezinin arkasında her bir lobun üst ve orta kısmı arasında bir alanda yerleşir

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rıdan fazla düşüş sağlanırsa adenom lehine karar verilir ve genellikle operasyon sonlandırılır, düşüş sağlanmazsa hiperplazi şüphesiyle başka bezlerin çıkarılmasıyla operasyona devam edilir (Gill, et al. 2011).

KAYNAKLAR

1. Akerström, G. & Malmaeus, J. & Bergström, R. (1984) Surgical anatomy of human parathyroid glands. *Surgery*, 95, 14-21
2. Akirov, A. & Asa, S. L. & Larouche, V., et al. (2019) The Clinicopathological Spectrum of Parathyroid Carcinoma. *Front Endocrinol (Lausanne)*, 10, 731. Doi: 10.3389/fendo.2019.00731
3. Arık, D. & Dünder, E. & Yılmaz, E., et al. (2017) Water-Clear Cell Adenoma of the Mediastinal Parathyroid Gland. *Turkish Journal of Pathology*, 35(2), 157-161. Doi: 10.5146/tjpath.2017.01407
4. Asare, EA. & Sturgeon C. & Winchester, DJ., et al. (2015) Parathyroid Carcinoma: An Update on Treatment Outcomes and Prognostic Factors from the National Cancer Data Base (NCDB). *Ann Surg Oncol.*, 22 (12), 3990-5. Doi: 10.1245/s10434-015-4672-3. Epub 2015 Jun 16.
5. Baloch, Z.W. & LiVolsi, V.A. (2015) Thyroid and Parathyroid. Mills S.E. (Ed.), *Sternberg's Diagnostic Surgical Pathology* (Volume 1, p 575-583). Lippincott Williams&Wilki.
6. Bauer, JL. & Toluie, S. & Thompson, LDR. (2018) Metastases to the Parathyroid Glands: A Comprehensive Literature Review of 127 Reported Cases. *Head Neck Pathol.* 12 (4):
7. Bleier, BJ. & LiVolsi, VA. & Chalian, AA., et al. (2006) Technetium Tc 99m Sestamibi Sensitivity in Oxyphil Cell-Dominant Parathyroid Adenomas. *Arch Otolaryngol Head Neck Surg.* 132(7), 779-782. doi:10.1001/archotol.132.7.779
8. Carpenter, JM. & Michaelson, PG. & Lidner, TK., et al. (2007) Parathyromatosis. *Ent Pathology Clinic.* 86 (1): s21
9. Chang, BA. & Sharma, A. & Anderson, D.W. (2016) Ectopic parathyroid adenoma in the soft palate: a case report. *J Otolaryngol Head Neck Surg.* 45: 53. doi: 10.1186/s40463-016-0165-z
10. Debruyne, F. & Ostyn, F. & Delaere, P. (1997) Distribution of the solitary adenoma over the parathyroid glands. *J Laryngol Otol.* 111(5), 459-60. doi: 10.1017/s0022215100137636.
11. DeLellis, RA. (2011) Parathyroid tumors and related disorders. *Modern Pathology* 24, S78-S93
12. DeLellis, R.A. et al. (2017) Tumors of the parathyroid glands. Lloyd R.V. et al. (ed), *WHO Classification of Tumors of endocrine Organs* (145-160). Maestro 38330 Saint-Ismier, France
13. Duan, K. & Hernandez, KG. & Mete, O. (2015) Clinicopathological correlates of hyperparatiroidism. *J. Clin. Pathol.* 68(10), 771-87
14. Duan, K. & Mete, Ö. (2015) Parathyroid Carcinoma: Diagnosis and Clinical Implications. *Turk Patoloji Derg.* 31 Suppl 1, 80-97. doi: 10.5146/tjpath.2015.01316.

15. Erickson, L.A. & Jin, L. & Papotti, M. & Lloyd R.V. (2002) Oxyphil parathyroid carcinomas: A clinicopathologic and immunohistochemical study of 10 cases. *Am. J. Surg. Pathology*, 26, 344-9
16. Erickson, LA & Mete, Ö. (2018) İmmuohistochemistry in Diagnostic Parathyroid Pathology. *Endocrine Pathology* 29, 113-129
17. Fancy, T. & Gallagher, D. & Hornig, J.D. (2010) Surgical anatomy of the thyroid and parathyroid glands. *Otolaryngol Clin North Am.* 43, 221-227
18. Galani, A. & Morandi, R. & Dimko, M., et al. (2021) Atypical parathyroid adenoma: clinical and anatomical pathologic features. *World Journal of Surgical Oncology* 19, 19 <https://doi.org/10.1186/s12957-021-02123-7>
19. Gill, M. & Dean, M. & Karr, J., et al. (2011) Intraoperative Parathyroid Hormone Assay: A Necessary Tool First Published February 4, 2011. <https://doi.org/10.1177/0194599811398597>
20. Gregorio, LD. & Lubitz, CC. & Hodin, RA., et al. (2016) The Truth about Double Adenomas: Incidence, Localization, and Intraoperative Parathyroid Hormone. *New England Surgical Society Article* 222(6), 1044-1052. doi.org/10.1016/j.jamcollsurg.2015.12.048
21. Grevellec, A. & Tucker, A.S. (2010) The pharyngeal pouches and clefts: development, evolution, structure and derivatives. *Semin Cell Dev Biol.* 21, 325-332
22. Güray, M. & Etit, D. (2016) Paratiroid. Sökmensüer, C. (Ed) & Sak, S.E. (Ed) *Endokrin Organ Patolojisi* (s147-174) İzmir: O'Tip Kitabevi ve Yayıncılık
23. Haven, C.J. & Puijenbroek, M.V. & Tan, M.H., et al. (2007) Identification of MEN1 and HRPT2 somatic mutations in paraffin-embedded (sporadic) parathyroid carcinomas. *Clin. Endocrinol(Oxf)*. 67(3), 370-376
24. Howson, P. & Kruijff, S. & Aniss, A., et al. (2015) Oxyphil Cell Parathyroid Adenomas Causing Primary Hyperparathyroidism: a Clinico-Pathological Correlation. *Endocr Pathol.* 26(3), 250-4. [doi: 10.1007/s12022-015-9378-3](https://doi.org/10.1007/s12022-015-9378-3).
25. Ioannis, P. & Stavros, P. & Nektarios, K., et al., (2018) Water-Clear Cell Adenoma of Parathyroid Gland: A Case Report and Concerns on Differential Diagnosis. *J. of Endocrinol Diabetes Obes* 6 (1), 1117.
26. Ito, Y. & Kakudo, K. & Hirokawa, M., et al. (2009) Clinical significance of extrathyroid extension to the parathyroid gland of papillary thyroid carcinoma. *Endocr J.* 56 (2), 251-5. [doi: 10.1507/endocrj.k08e-297](https://doi.org/10.1507/endocrj.k08e-297).
1. Johnson, S.J. & Stephenson, T.J. (2016) Standards and datasets for reporting cancers Dataset for parathyroid cancer histopathology reports G102 (version number 3)
27. Juhlin, CC. & Falhammar, H. & Zedenius, J., et al. (2020) Lipoadenoma of the Parathyroid Gland: Characterization of an Institutional Series Spanning 28 Years. *Endocr Pathol.* 31 (2), 156-165.
28. Guilmette, J. & Sadow, PM. (2019) Parathyroid Pathology. *Surg Pathol Clin.* 12(4), 1007-1019. [Doi: 10.1016/j.path.2019.08.006](https://doi.org/10.1016/j.path.2019.08.006). Epub 2019 Sep 27.
29. Kandil, E. & Alabbas, HH. & Bansal, A., et al. (2009) Intraoperative Parathyroid Hormone Assay in Patients With Primary Hyperparathyroidism and Double Adenoma. *Arch Otolaryngol Head Neck Surg.* 135(12), 1206-1208. [doi:10.1001/archoto.2009.192](https://doi.org/10.1001/archoto.2009.192)
30. Karvounaris, DC. & Symeonidis, N. & Triantafyllou, A., et al. (2010) Ectopic parathyroid adenoma located inside the hypoglossal nerve. *Head Neck* 32(9), 1273-6. [doi: 10.1002/hed.21215](https://doi.org/10.1002/hed.21215).

31. Levy, MT & Braun, JT. & Pennant, M., et al. (2010) Primary Paraganglioma of the Parathyroid: A Case Report and Clinicopathologic Review. *Head Neck Pathol.* 4(1), 37–43. doi: 10.1007/s12105-009-0157-7
32. Lu, M. & Kjellin, H. & Fotouhi, O., et al. (2018) Molecular profiles of oxyphilic and chief cell parathyroid adenoma. *Molecular and Cellular Endocrinology* 470, 84-95. doi. org/10.1016/j.mce.2017.10.001
33. Mallik, S. & Aggarwal, P. & Singh, I., et al. (2017) A study on development and morphogenesis of parathyroid gland in the developing human embryo. *J. Med. Soc.* 31 (3), 195-200
34. Marcocci, C. & Cetani, F. & Rubin, M.R., et al. (2008) Review Parathyroid Carcinoma. *J Bone Miner Res.* 23(12), 1869-1880. doi: 10.1359/jbmr.081018
35. McCoy, KL. & Seethala, RR. & Armstrong, MJ., et al. (2015) The clinical importance of parathyroid atypia: is long-term surveillance necessary? *Surgery* 158(4), 929-35; discussion 935-6. doi: 10.1016/j.surg.2015.06.022
36. Mejia, O. & Bahmad, HF. & Oh, KS., et al. Parathyroid hemangioma. (2021) *Autops Case Rep* [Internet]. 11:e2021270. doi.org/10.4322/acr.2021.270
37. Milas, M. & Wagner, K. & Easley, KA. (2003) Double adenomas revisited: nonuniform distribution favors enlarged superior parathyroids (fourth pouch disease). *Surgery* 134(6), 995-1004 doi: 10.1016/j.surg.2003.07.009.
38. Rodrigo, JP. & Hernandez-Prera, J.C. & Randolph, GW., et al. (2020) Parathyroid cancer: An update. *Cancer Treat Rev* 86:102012. doi: 10.1016/j.ctrv.2020.102012. Epub 2020 Mar 19.
39. Roy, M. & Mazeh, H. & Chen, H. & Sippel, RS. (2013) Incidence and localization of ectopic parathyroid adenomas in previously unexplored patients. *World J Surg.* 37 (1), 102-6. doi: 10.1007/s00268-012-1773-z.
40. Sharretts, JM. & Kebebew, E. & Simonds, WF. (2010). Parathyroid Cancer. *Semin Oncol.* 37 (6), 580-590. doi: 10.1053/j.seminoncol.2010.10.013
41. Shifrin, A. & LiVolsi, V. & Shifrin-Douglas, S., et al. (2015) Primary and Metastatic Parathyroid Malignancies: A Rare or Underdiagnosed Condition? *The Journal of Clinical Endocrinology & Metabolism*, 100(3), E478–E481, <https://doi.org/10.1210/jc.2014-2760>
42. Simonds, W.F. (2017) Genetics of Hyperparathyroidism, Including Parathyroid Cancer. *Endocrin. Metab. Clin. N. Am.* 46, 405-418
43. Solcia, E. & Kloppel, G. & Sobin, LH. (2000) *Histological Typing of Endocrine Tumors.* 2nd ed. s: 48–50. Berlin, Germany: Springer-Verlag
44. Svec, A. & Bury, Y. (2010) Haemangioma of the parathyroid gland. Does it really exist? *Pathol Oncol Res.* 16 (3), 443-6. doi: 10.1007/s12253-009-9236-z.
45. Yeh, MV. & Ituarte, PHG & Zhou, HC., et al. (2013) Incidence and prevalence of primary hyperparathyroidism in a racially mixed population. *J Clin Endocrinol Metab.* 98 (3):1122-9. doi: 10.1210/jc.2012-4022. Epub 2013 Feb 15.