

BÖLÜM 21

ALVEOLAR SOFT PART SARKOMLAR VE PERİFERİK SİNİR KİLİFİ TÜMÖRLERİ

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GİRİŞ

Alveolar soft part sarkomlar (ASPS) genelde yumuşak doku sarkomlarının %1’inden azında görülen ve genellikle erişkinlerde alt ekstremite yumuşak dokularında, çocukların baş ve boyun bölgesinde ortaya çıkan nadir bir neoplazmadır. Özellikle yavaş büyüyen bir kitle olarak ortaya çıkar, teşhisi zor olabilir. Genellikle erişkinlerde tanı anında metastatik hastalık olarak ortaya çıkar. Spesifik bir kromozomal alterasyon olan der(17)t(X:17)(p11:q25) ile karakterizedir. Bu kromozomal alterasyon transkripsiyon faktör E3 (TFE3) ile alveolar soft part sarkom kritik bölge 1(ASPSCR1) füzyonu sonucu oluşur. Bu translokasyon tanısal olarak önemli ve spesifiktir çünkü tümör çekirdekleri immünohistokimya boyama ile TFE3 için pozitiftir.

Periferik sinir kılıfı tümörleri (PSKT) periferik sinirlerden kaynaklanan ve sarkomların yaklaşık %4’ünü oluşturan tümörlerdir. Ana risk faktörlerinden birisi nörofibromatozis tip I (NF1) genetik hastalığı ile birlaklı olmasına rağmen PSKT vakalarının yaklaşık %45’i sporadik olarak ortaya çıkar. Sporadik vakalarda tanımlanan en önemli risk faktör ise radyasyona maruziyettir. Her iki cinsiyette eşit sıklıkta olarak saptanmakla beraber genelde otuzlu yaşlarda pik yapma eğiliminde olmaktadır. Duysal sinirler ön planda etkilendir ve hastalarda en önemli semptom paraparezi yani ilgili uzuvlarda yorgunluk, uyuşukluk ve hareket güçlüğü ile karakterizedir.

ALVEOLAR SOFT PART SARKOMLAR

Epidemiyoloji ve İnsidans

ASPS’lar tüm yumuşak doku tümörlerinin ortalama %1’inden azında görülen bir alt tiptir (1). ASPS’ler genç erişkinlerde genelde 15-30 yaş arasında daha sık tanı

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KAYNAKLAR

1. Amer KM, Thomson JE, Congiusta D, Dobitsch A, et al. Epidemiology, Incidence, and Survival of Rhabdomyosarcoma Subtypes: SEER and ICES Database Analysis. *J Orthop Res.* 2019 Oct;37(10):2226-2230. doi: 10.1002/jor.24387.
2. Sbaraglia M, Bellan E, Dei Tos AP, et al. The 2020 WHO Classification of Soft Tissue Tumours: news and perspectives. *Pathologica.* 2021 Apr;113(2):70-84. doi: 10.32074/1591-951X-213.
3. Casanova M, Ferrari A, Bisogno G, et al. Alveolar soft part sarcoma in children and adolescents: A report from the Soft-Tissue Sarcoma Italian Cooperative Group. *Ann Oncol.* 2000 Nov;11(11):1445-9. doi: 10.1023/a:102.657.9623136.
4. Amin MB, Patel RM, Oliveira P, Cabrera R, et al. Alveolar soft-part sarcoma of the urinary bladder with urethral recurrence: a unique case with emphasis on differential diagnoses and diagnostic utility of an immunohistochemical panel including TFE3. *Am J Surg Pathol.* 2006 Oct;30(10):1322-5. doi: 10.1097/01.pas.000.021.3298.34520.2b.
5. Tsuji K, Ishikawa Y, Imamura T. Technique for differentiating alveolar soft part sarcoma from other tumors in paraffin-embedded tissue: comparison of immunohistochemistry for TFE3 and CD147 and of reverse transcription polymerase chain reaction for ASPSCR1-TFE3 fusion transcript. *Hum Pathol.* 2012 Mar;43(3):356-63. doi: 10.1016/j.humpath.2011.05.
6. Katenkamp K, Katenkamp D. Soft tissue tumors: new perspectives on classification and diagnosis. *Dtsch Arztbl Int.* 2009 Sep;106(39):632-6. doi: 10.3238/arztbl.2009.0632.
7. Aiken AH, Stone JA. Alveolar soft-part sarcoma of the tongue. *AJNR Am J Neuroradiol.* 2003 Jun-Jul;24(6):1156-8.
8. Rodríguez-Velasco A, Fermán-Cano F, Cerecedo-Díaz F. Rare tumor of the tongue in a child: alveolar soft part sarcoma. *Pediatr Dev Pathol.* 2009 Mar-Apr;12(2):147-51. doi: 10.2350/07-07-0317.1.
9. Lieberman PH, Brennan MF, Kimmel M, et al. Alveolar soft-part sarcoma. A clinico-pathologic study of half a century. *Cancer.* 1989 Jan 1;63(1):1-13.
10. Portera CA Jr, Ho V, Patel SR, et al. Alveolar soft part sarcoma: clinical course and patterns of metastasis in 70 patients treated at a single institution. *Cancer.* 2001 Feb 1;91(3):585-91.
11. Casanova M, Ferrari A, Bisogno G, et al. Alveolar soft part sarcoma in children and adolescents: A report from the Soft-Tissue Sarcoma Italian Cooperative Group. *Ann Oncol.* 2000 Nov;11(11):1445-9. doi: 10.1023/a:102.657.9623136.
12. Ogura K, Beppu Y, Chuman H, et al. Alveolar soft part sarcoma: a single-center 26-patient case series and review of the literature. *Sarcoma.* 2012;2012:907179. doi: 10.1155/2012/907179.
13. Lin YK, Wu PK, Chen CF, et al. Alveolar soft part sarcoma: Clinical presentation, treatment, and outcome in a series of 13 patients. *J Chin Med Assoc.* 2018 Aug;81(8):735-741. doi: 10.1016/j.jcma.2018.01.006.
14. Gingrich AA, Bateni SB, Monjazeb AM, et al. Neoadjuvant Radiotherapy is Associated with R0 Resection and Improved Survival for Patients with Extremity Soft Tissue Sarcoma Undergoing Surgery: A National Cancer Database Analysis. *Ann Surg Oncol.* 2017 Oct;24(11):3252-3263. doi: 10.1245/s10434.017.6019-8.
15. Paoluzzi L, Maki RG. Diagnosis, Prognosis, and Treatment of Alveolar Soft-Part Sarcoma: A Review. *JAMA Oncol.* 2019 Feb 1;5(2):254-260. doi: 10.1001/jamaoncol.2018.4490.
16. Emmez H, Kale A, Sevinç Ç, et al. Primary Intracerebral Alveolar Soft Part Sarcoma in an 11-Year-Old Girl: Case Report and Review of the Literature. *NMC Case Rep J.* 2014 Sep 29;2(1):31-35. doi: 10.2176/nmccrj.2014-0009.
17. Mullins BT, Hackman T. Adult alveolar soft part sarcoma of the head and neck: a report of two cases and literature review. *Case Rep Oncol Med.* 2014;2014:597291. doi: 10.1155/2014/597291.
18. Reichardt P, Lindner T, Pink D, et al. Chemotherapy in alveolar soft part sarcomas. What do we know? *Eur J Cancer.* 2003 Jul;39(11):1511-6. doi: 10.1016/s0959-8049(03)00264-8.
19. Brennan B, Zanetti I, Orbach D, et al. Alveolar soft part sarcoma in children and adolescents: The European Paediatric Soft Tissue Sarcoma study group prospective trial (EpSSG NRSTS

- 2005). *Pediatr Blood Cancer*. 2018 Apr;65(4). doi: 10.1002/pbc.26942.
- 20. Penel N, Robin YM, Blay JY. Personalised management of alveolar soft part sarcoma: a promising phase 2 study. *Lancet Oncol*. 2019 Jun;20(6):750-752. doi: 10.1016/S1470-2045(19)30286-4.
 - 21. Lazar AJ, Das P, Tuvin D, et al. Angiogenesis-promoting gene patterns in alveolar soft part sarcoma. *Clin Cancer Res*. 2007 Dec 15;13(24):7314-21. doi: 10.1158/1078-0432.CCR-07-0174.
 - 22. Penel N, Coindre JM, Giraud A, et al. Presentation and outcome of frequent and rare sarcoma histologic subtypes: A study of 10,262 patients with localized visceral/soft tissue sarcoma managed in reference centers. *Cancer*. 2018 Mar 15;124(6):1179-1187. doi: 10.1002/cncr.31176.
 - 23. Chi Y, Fang Z, Hong X, et al. Safety and Efficacy of Anlotinib, a Multikinase Angiogenesis Inhibitor, in Patients with Refractory Metastatic Soft-Tissue Sarcoma. *Clin Cancer Res*. 2018 Nov 1;24(21):5233-5238. doi: 10.1158/1078-0432.CCR-17-3766.
 - 24. Kim M, Kim TM, Keam B, et al. A Phase II Trial of Pazopanib in Patients with Metastatic Alveolar Soft Part Sarcoma. *Oncologist*. 2019 Jan;24(1):20-e29. doi: 10.1634/theoncologist.2018-0464.
 - 25. Stacchiotti S, Mir O, Le Cesne A, et al. Activity of Pazopanib and Trabectedin in Advanced Alveolar Soft Part Sarcoma. *Oncologist*. 2018 Jan;23(1):62-70. doi: 10.1634/theoncologist.2017-0161.
 - 26. Shido Y, Matsuyama Y. Advanced Alveolar Soft Part Sarcoma Treated with Pazopanib over Three Years. *Case Rep Oncol Med*. 2017;2017:3738562. doi: 10.1155/2017/3738562.
 - 27. Stacchiotti S, Negri T, Zaffaroni N, et al. Sunitinib in advanced alveolar soft part sarcoma: evidence of a direct antitumor effect. *Ann Oncol*. 2011 Jul;22(7):1682-1690. doi: 10.1093/annonc/mdq644.
 - 28. Jagodzińska-Mucha P, Świtaj T, Kozak K, et al. Long-term results of therapy with sunitinib in metastatic alveolar soft part sarcoma. *Tumori*. 2017 May 12;103(3):231-235. doi: 10.5301/tj.5000617.
 - 29. Li T, Wang L, Wang H, et al. A retrospective analysis of 14 consecutive Chinese patients with unresectable or metastatic alveolar soft part sarcoma treated with sunitinib. *Invest New Drugs*. 2016 Dec;34(6):701-706. doi: 10.1007/s10637_016_0390-3.
 - 30. Schöffski P, Wozniak A, Kasper B, et al. Activity and safety of crizotinib in patients with alveolar soft part sarcoma with rearrangement of TFE3: European Organization for Research and Treatment of Cancer (EORTC) phase II trial 90101 'CREATE'. *Ann Oncol*. 2018 Mar 1;29(3):758-765. doi: 10.1093/annonc/mdx774.
 - 31. Lewin J, Davidson S, Anderson ND, et al. Response to Immune Checkpoint Inhibition in Two Patients with Alveolar Soft-Part Sarcoma. *Cancer Immunol Res*. 2018 Sep;6(9):1001-1007. doi: 10.1158/2326-6066.CIR-18-0037.
 - 32. Groisberg R, Hong DS, Behrang A, et al. Characteristics and outcomes of patients with advanced sarcoma enrolled in early phase immunotherapy trials. *J Immunother Cancer*. 2017 Dec 19;5(1):100. doi: 10.1186/s40425_017_0301-y.
 - 33. Wilky BA, Trucco MM, Subhawong TK, et al. Axitinib plus pembrolizumab in patients with advanced sarcomas including alveolar soft-part sarcoma: a single-centre, single-arm, phase 2 trial. *Lancet Oncol*. 2019 Jun;20(6):837-848. doi: 10.1016/S1470-2045(19)30153-6.
 - 34. Baehring JM, Betensky RA, Batchelor TT. Malignant peripheral nerve sheath tumor: the clinical spectrum and outcome of treatment. *Neurology*. 2003 Sep 9;61(5):696-8. doi: 10.1212/01.wnl.00001.8813.05925.2c.
 - 35. Bhattacharyya AK, Perrin R, Guha A. Peripheral nerve tumors: management strategies and molecular insights. *J Neurooncol*. 2004 Aug-Sep;69(1-3):335-49. doi: 10.1023/b:neon.0000004.1891.39474.cb.
 - 36. Ferner RE, Gutmann DH. International consensus statement on malignant peripheral nerve sheath tumors in neurofibromatosis. *Cancer Res*. 2002 Mar 1;62(5):1573-7.
 - 37. Tiel R, Kline D. Peripheral nerve tumors: surgical principles, approaches, and techniques. *Neurosurg Clin N Am*. 2004 Apr;15(2):167-75, vi. doi: 10.1016/j.nec.2004.02.003.
 - 38. Skovronsky DM, Oberholtzer JC. Pathologic classification of peripheral nerve tumors. *Neuro-*

- surg Clin N Am.* 2004 Apr;15(2):157-66. doi: 10.1016/j.nec.2004.02.005.
- 39. MacCollin M, Chiocca EA, Evans DG, et al. Diagnostic criteria for schwannomatosis. *Neurology.* 2005 Jun 14;64(11):1838-45. doi: 10.1212/01.WNL.000.016.3982.78900.
 - 40. Rankine AJ, Filion PR, Platten MA, et al. Perineurioma: a clinicopathological study of eight cases. *Pathology.* 2004 Aug;36(4):309-15. doi: 10.1080/003.130.2041000.172.1663.
 - 41. Harder A, Wesemann M, Hagel C, et al. Hybrid neurofibroma/schwannoma is overrepresented among schwannomatosis and neurofibromatosis patients. *Am J Surg Pathol.* 2012 May;36(5):702-9. doi: 10.1097/PAS.0b013e31824d3155.
 - 42. Fetsch JF, Laskin WB, Miettinen M. Nerve sheath myxoma: a clinicopathologic and immunohistochemical analysis of 57 morphologically distinctive, S-100 protein- and GFAP-positive, myxoid peripheral nerve sheath tumors with a predilection for the extremities and a high local recurrence rate. *Am J Surg Pathol.* 2005 Dec;29(12):1615-24. doi: 10.1097/01.pas.000.017.3025.87476.a4.
 - 43. Modha A, Paty P, Bilsky MH. Presacral ganglioneuromas. Report of five cases and review of the literature. *J Neurosurg Spine.* 2005 Mar;2(3):366-71. doi: 10.3171/spi.2005.2.3.0366.
 - 44. Escott EJ, Kleinschmidt-DeMasters BK, Brega K, et al. Proximal nerve root spinal hemangioblastomas: presentation of three cases, MR appearance, and literature review. *Surg Neurol.* 2004 Mar;61(3):262-73; discussion 273. doi: 10.1016/S0090-3019(03)00399-9.
 - 45. Baehring JM, Betensky RA, Batchelor TT. Malignant peripheral nerve sheath tumor: the clinical spectrum and outcome of treatment. *Neurology.* 2003 Sep 9;61(5):696-8. doi: 10.1212/01.wnl.000.007.8813.05925.2c.
 - 46. Martin E, Geitenbeek RTJ, Coert JH, et al. A Bayesian approach for diagnostic accuracy of malignant peripheral nerve sheath tumors: a systematic review and meta-analysis. *Neuro Oncol.* 2021 Apr 12;23(4):557-571. doi: 10.1093/neuonc/noaa280.
 - 47. Bhattacharyya AK, Perrin R, Guha A. Peripheral nerve tumors: management strategies and molecular insights. *J Neurooncol.* 2004 Aug-Sep;69(1-3):335-49. doi: 10.1023/b:neon.000.004.1891.39474.cb.
 - 48. Grünwald V, Karch A, Schuler M, et al. Randomized Comparison of Pazopanib and Doxorubicin as First-Line Treatment in Patients With Metastatic Soft Tissue Sarcoma Age 60 Years or Older: Results of a German Intergroup Study. *J Clin Oncol.* 2020 Oct 20;38(30):3555-3564. doi: 10.1200/JCO.20.00714.