



BÖLÜM 18

NÖROSARKOİDOZ

Sinan ELİAÇIK¹

GİRİŞ

Sarkoidoz multipl sistem tutulumu olan, en sık akciğerleri etkilemekle birlikte kimi zaman ilk belirtisi akciğer dışı tutulumlarda olabilen kazeifiye olmayan granülomatöz inflamasyonla karakterize multidisipliner bir hastalıktır.

Etyolojik nedeni kesin bilinmemekle birlikte, geniş yelpazedeki klinik bulgu ve belirtileri ile birçok hastalığın ayırıcı tanısında akla gelebilecek, yaşamın her döneminde görülebilmekle birlikte, sıklıkla genç erişkin veya orta yaş grubunda akılda tutulması gereken hastalıklardandır.

Sarkoidoz, santral ve periferik sinir sistemi tutulumu yapabilmektedir. Santral sinir sisteminde kranial sinirleri, beyin parankimini, meninksleri etkileyebilir. Miyopati ve periferik nöropati tablolarıda görülebilmektedir. Pulmoner sarkoidozlu vakalarda nörosarkoidoz (NS) %5-10 civarında görülmekle birlikte sarkoidozlu hastaların otopsilerinde %15-25, sistemik sarkoidozda ise %34 oranında saptayan çalışmalar mevcuttur (1,2).

Sistemik bulguların eşlik etmediği sarkoidoz vakalarında NS tanısını saptamak iyi bir ayırıcı tanıyı gerektirmektedir. Bu bölümde sarkoidoz hakkında genel bilgilendirme yapıp, sonrasında NS ayrıntıları ile gözden geçirilecektir.

¹Dr. Öğr. Üyesi, Hitit Üniversitesi Tıp Fakültesi, Nöroloji AD, sinaneliacik@hitit.edu.tr

KAYNAKLAR

1. Bradshaw MJ, Pawate S, Koth LL, et al. Neurosarcoidosis: Pathophysiology, Diagnosis, and Treatment. *Neurol Neuroimmunol Neuroinflamm.* 2021; 8 (6) e1084.
2. Joubert B, Chapelon-Abrie C, Biard L, et al. Association of prognostic factors and immunosuppressive treatment with long-term outcomes in neurosarcoidosis. *JAMA Neurol.* 2017;74(11):1336-1344.
3. Møller J, Hellmund V, Hilberg O, et al. Sarcoidosis. *Ugeskr Laeger.* 2018;20:180(34)
4. Iannuzzi MC, Rybicki BA, Teirstein AS. Sarcoidosis. *N Engl J Med.* 2007; 22;357(21):2153-2165.
5. Inaoka PT, Shono M, Kamada M, et al. Host-microbe interactions in the pathogenesis and clinical course of sarcoidosis. *Journal of biomedical science.* 2019;26(1):45.
6. Fingerlin TE, Hamzeh N, Maier LA. Genetics of Sarcoidosis. *Clin Chest Med.* 2015;36(4):569-584.
7. Moller DR, Rybicki BA, Hamzeh NY, et al. Genetic, immunologic, and environmental basis of sarcoidosis. *Ann Am Thorac Soc* 2017;14(Supplement_6):429-436.
8. Iranmanesh A, Washington L. Pulmonary Sarcoidosis: A Pictorial Review. *Seminars in Ultrasound, CT and MRI.* 2019;40:200-12. Doi: 10.1053/j.sult.2018.12.001.
9. Musellim B, Kumbasar O, Ongen G, et al. Epidemiological features of Turkish patients with sarcoidosis. *Respiratory medicine.* 2009;103(6):907-912.
10. Okumus G, Musellim B, Cetinkaya E, et al. Extrapulmonary involvement in patients with sarcoidosis in Turkey. *Respirology* 2011; 16: 446-450.
11. West SG. Current management of sarcoidosis I: pulmonary, cardiac, and neurologic manifestations. *Current opinion in rheumatology.* 2018;30(3):243-248.
12. Bargagli E, Prasse A. Sarcoidosis: a review for the internist. *Internal and emergency medicine.* 2018;13(3):325-331.
13. Judson MA. The diagnosis of sarcoidosis. *Clin Chest Med* 2008; 29: 415-427.
14. Hoitsma E, Faber CG, Drent M, et al. Neurosarcoidosis: a clinical dilemma. *Lancet Neurol.* 2004;3:397-407.
15. Voortman M, Stern BJ, Saketkoo LA, et al. The Burden of Neurosarcoidosis: Essential Approaches to Early Diagnosis and Treatment. *Semin. Respir Crit Care Med.* 2020; 41:641-651.
16. Erdoğan M, Ataklı D. Nörosarkoidoz: Tanımı ve Konsensüs Tanı Ölçütleri. *Turk J Neurol.* 2019;25:107-108.
17. Koczman JJ, Rouleau J, Gaunt M, et al. Neuro-ophthalmic sarcoidosis: the University of Iowa experience. *Semin Ophthalmol.* 2008;23(3):157-168.
18. Wessendorf TE, Bonella F, Costabel U. Diagnosis of Sarcoidosis. *Clin Rev Allergy Immunol.* 2015;49:54-62.
19. Carlson ML, White JR Jr, Espahbodi M, et al. Cranial base manifestations of neurosarcoidosis: a review of 305 patients. *Otol Neurotol.* 2015;36(1):156-166.
20. Kidd DP. Neurosarcoidosis: Clinical Manifestations, Investigation and Treatment *Pract Neurol.* 2020; 20: 199-212.
21. Mekinian A, Maisonnobe L, Boukari L, et al. Characteristics, outcome and treatments with cranial pachymeningitis: a multicenter French retrospective study of 60 patients. *Medicine (Baltimore).* 2018;97(30):e11413.

22. O'Dwyer JP, Al-Moyeed BA, Farrell MA, et al. Neurosarcoidosis-related intracranial haemorrhage: three new cases and a systematic review of the literature. *Eur J Neurol.* 2013;20:71–78.
23. Langrand C, Bihan H, Raverot G, et al. HypothalamoPituitary sarcoidosis: a multicenter study of 24 patients. *QJM.* 2012;105:981–995.
24. Anthony J, Esper GJ, Ioachimescu A. Hypothalamic–pituitary sarcoidosis with vision loss and hypopituitarism: case series and literature review. *Pituitary* 2016;19:19–29.
25. Krumholz A, Stern BJ. Neurologic manifestations of sarcoidosis. *Handb Clin Neurol.* 2014;119:305–333.
26. Pawate S, Moses H, Sriram S. Presentations and outcomes of neurosarcoidosis: a study of 54 cases. *QJM.* 2009;102(7):449–460.
27. Soni N, Bathla G, Pillenahalli Maheshwarappa R. Imaging findings in spinal sarcoidosis: a report of 18 cases and review of the current literature. *Neuroradiol J.* 2019; 32(1):17–28.
28. Murphy OC, Salazar-Camelo A, Jimenez JA, et al. Clinical and MRI phenotypes of sarcoidosis-associated myelopathy. *Neurol Neuroimmunol Neuroinflamm.* 2020;7:1–10.
29. Cohen Aubart F, Abbara S, Maisonobe T, et al. Symptomatic muscular sarcoidosis: lessons from a nationwide multicenter study. *Neurol Neuroimmunol Neuroinflamm.* 2018;5(3):e452.
30. Kidd DP. Sarcoidosis of the central nervous system: clinical features, imaging and CSF results. *J Neurol* ;2018:1906.
31. Wengert O, Rothenfusser-Korber E, Vollrath B, et al. Neurosarcoidosis: correlation of cerebrospinal fluid findings with diffuse leptomeningeal gadolinium enhancement on MRI and clinical disease activity. *J Neurol Sci.* 2013;335:124–130.
32. Oksanen V. Neurosarcoidosis: Seminars in Respiratory Medicine 1992; 13: 459–467.
33. Çelik GG, Uygunoğlu U, Uludüz D. Diagnosis and Treatment in Neurosarcoidosis *Arch Neuropsychiatr.* 2015; 52: 102–106. Doi: 10.5152/npa.2015.7318.
34. Baughman RP, Lower EE. Treatment of sarcoidosis. *Clin Rev Allergy Immunol.* 2015;49:79–92.
35. Miloslavsky EM, Naden RP, Bijlsma JW, et al. Development of a Glucocorticoid Toxicity Index (GTI) using multicriteria decision analysis. *Ann Rheum Dis.* 2017; 76(3):543–546.
36. Bitoun S, Bouvry D, Borie R, et al. Treatment of neurosarcoidosis: a comparative study of methotrexate and mycophenolate mofetil. *Neurology* 2016;87:1–5.
37. Ramachandraiah V, Aronow W, Chandry D. Pulmonary sarcoidosis: an update. *Postgraduate medicine.* 2017;129(1):149–158.
38. Llanos O, Hamzeh N. Sarcoidosis. *Med Clin North Am.* 2019;103(3):527–534.
39. Gelfand JM, Bradshaw MJ, Stern BJ, et al. Infliximab for the treatment of CNS sarcoidosis: a multi-institutional series. *Neurology.* 2017;89(20):2092–2100.
40. Spagnolo P, Rossi G, Trisolini R, et al. Pulmonary sarcoidosis. *The Lancet Respiratory Medicine.* 2018;6(5):389–402.
41. Kouranos V, Wells A, Walsh S. Why do people die from pulmonary sarcoidosis? Current opinion in pulmonary medicine. 2018;24(5):527–535.
42. Modi M, Bhatia R, Jain R, et al. Uncommon manifestations of Neurosarcoidosis. *Neurol India* 2004; 52: 280–281.
43. Spencer TS, Campellone JV, Maldonado I, et al. Clinical and magnetic resonance imaging manifestations of Neurosarcoidosis. *Seminars in Arthritis and Rheumatism* 2005; 34: 1–20.