

Bölüm 9

HİSTİOSİTOZLAR

Aslıhan SEZGİN¹

GİRİŞ

Histiositler langerhans hücreleri (LH), monosit-makrofaj sistemi, dermal ve interstisyel dendritleri içeren dokularda yerleşik beyaz kan hücrelerini kapsar (1). Bu hücrelerin etkilenen dokulardaki infiltrasyon ve birikimini tanımlayan proliferatif bozukluklar histiositozlar olarak adlandırılmaktadır. Histiositozlar pek çok farklı organda tutulum oluşturabilmektedir. Önceleri eosinofilik granulom, Histiositoz-X olarak adlandırılan hastalığa 1970’te Nezelof tarafından langerin (CD207) ile ilişkili intrasitoplazmik Birbeck granüllerininin saptanması ile langerhans hücreli histiositoz (LCH) adı verilmiştir (2).

Dünya Sağlık Örgütü (WHO) hematopoietik ve lenfoid tümörler klasifikasyonuna göre bu grup hastalıklar 3’e ayrılır (3):

1. Dendritik Hücre Bozuklukları: Langerhans hücreli histiositoz (LCH), juvenil ksantogranuloma (JXG), dendritik fenotipli soliter histiositoma ve Erdheim-Chester hastalığı (ECD) bu gruba dahildir.
2. Makrofaj İlişkili Bozukluklar: Primer ve sekonder hemofagositik sendromlar, makrofaj fenotipli soliter histiositoma ve Rosai-Dorfman hastalığı (RDD) bu gruba dahil edilmiştir.
3. Malign Histiositik Bozukluklar: Bu grupta monosit ilişkili lösemiler (akut monositik lösemi, akut myelomonositik lösemi), ekstremiteler monositik tümör ve dendrit veya makrofaj ilişkili histiositik sarkom yer alır.

Histiocyte Society 2016’da histiositozları 5 ana başlıkta sınıflandırmıştır (4).

LANGERHANS HÜCRELİ HİSTİOSİTOZ

Langerhans hücreleri (LH) deri ve mukozanın özelleşmiş dendritik hücreleridir. LCH’da dokuları infiltre eden hücreler morfolojik ve immunfenotipik olarak LH ile benzerlik gösterdiğinden hastalığa LCH adı verilmiştir. LCH tüm organlarda infiltrasyon oluşturabilen, daha sık olarak tek veya çok sayıda litik kemik lezyonları ile karakterize bir dendritik hücre hastalığıdır. Tam olarak insidansı

¹ Hematoloji Yan Dal Uzmanı, Ağrı Devlet Hastanesi, a511han@hotmail.com

Sıklıkla hastalık kendini sınırlar; fakat atak-remisyon dönemleri yıllar sürebilir. Klinik olarak hastalar 1-sadece LAP ve spontan remisyon ile giden hastalar, 2-yaygın nodal hastalık ve immunolojik anomaliler ile giden hastalar (67) 3-yaygın nodal ve ektranodal hastalık, uzamış klinik ve relaps-remisyon ile giden hastalar olarak sınıflandırılabilirler (68).

Kutanöz RDD ise sistemik RDD farklı bir hastalık olup deriye sınırlıdır; benign gidişli hastalıkta kozmetik ya da relaps olgularda tedavi ihtiyacı olabilir (69).

Tedavi:

Hastaların çoğunda tedavi gerekmez. Ektranodal vital organ tutulumu veya hayatı tehdit eden nodal olan hastalarda tedavi gerekebilir. Obstruksiyona sebep olan hastalarda cerrahi seçenek olabilir (70). Sistemik steroid tedavisi LN boyutlarını küçültse de tedavi sonrası rekürrens gelişebilir. Deri ve LN tutulumu olan bir hastada uzun süreli tedavinin yararı gösterilmiştir. Histiocyte Society vital organ tutulumu olmayan hastalarda tedavi önermemektedir. LN tutulumu olan olgularda öncelikle düşük doz prednison tedavisini, vital organ basısı olan vakalarda ise cerrahi ve yüksek doz steroid tedavisini önermektedir. Cerrahi kontrendike olan vakalarda radyoterapi denenebilir. Yanıtsız, hayatı tehdit eden ve sık tekrarlayan vakalarda kladribinin efektif olduğunu bildiren yayınlar mevcuttur (70-71).

JUVENİL KSANTOGRANULOMA (JXG)

Bir başka kendini sınırlayan non langerhans histiositoz olan JXG genellikle infantil dönem-çocuklukta multiple deri lezyonları ile ortaya çıkar. Tutulum en sık baş, boyun, gövdede küçük, sert makulopapuler döküntüler şeklindedir (72). Derin yumuşak doku ve organ tutulumu olabilmekle birlikte sistemik tutulum nadirdir. Deri tutulumu kendini sınırladığından nadiren tedavi gerektirir. Büyük abdominal kitleler, MSS ve kemik iliği tutulumu olanlarda LCH benzeri tedaviler önerilmektedir. Erişkinde ortaya çıkan hastalık daha komplike olma eğilimi gösterir ve spontan düzelme beklenmez.

KAYNAKLAR

- 1 Cline Martin J. Histiocytes and Histiocytosis Blood. 1994 Nov. 84(9): 2840-2853
- 2 Allen CE, Ladisch S, McClain KL. How I treat Langerhans cell histiocytosis. Blood. 2015 Jul 2;126(1):26-35.
- 3 Jaffe R, Weiss LM, Facchetti F, et al. Tumours derived from Langerhans cells. In: World Health Organization Classification of Tumours of Haematopoietic and Lymphoid Tissues IARC Press, Lyon 2008. p.358
- 4 Emile JF, Ablu O, Fraitag S, et al. Revised classification of histiocytoses and neoplasms of the macrophage-dendritic cell lineages. Blood 2016; 127:2672.

5. Allen CE, Li L, Peters TL, et al. Cell-specific gene expression in Langerhans cell histiocytosis lesions reveals a distinct profile compared with epidermal Langerhans cells. *J Immunol* 2010; 184:4557.
6. Grois N, Pötschger U, Prosch H, et al. Risk factors for diabetes insipidus in langerhans cell histiocytosis. *Pediatr Blood Cancer* 2006; 46:228.
7. Götz G, Fichter J. Langerhans'-cell histiocytosis in 58 adults. *Eur J Med Res* 2004; 9:510. Aricò M, Girschikofsky M, Génereau T, et al. Langerhans cell histiocytosis in adults. Report from the International Registry of the Histiocyte Society. *Eur J Cancer* 2003; 39:2341.
8. Slater JM, Swarm OJ. Eosinophilic granuloma of bone. *Med Pediatr Oncol* 1980; 8:151.
9. Huang W, Yang X, Cao D, et al. Eosinophilic granuloma of spine in adults: a report of 30 cases and outcome. *Acta Neurochir (Wien)* 2010; 152:1129.
10. D'Ambrosio N, Soohoo S, Warshall C, et al. Craniofacial and intracranial manifestations of langerhans cell histiocytosis: report of findings in 100 patients. *AJR Am J Roentgenol* 2008; 191:589.
11. Baumgartner I, von Hochstetter A, Baumert B, et al. Langerhans'-cell histiocytosis in adults. *Med Pediatr Oncol* 1997; 28:9.
12. Héritier S, Emile JF, Barkaoui MA, et al. BRAF Mutation Correlates With High-Risk Langerhans Cell Histiocytosis and Increased Resistance to First-Line Therapy. *J Clin Oncol* 2016; 34:3023.
13. Gadner H, Grois N, Pötschger U, et al. Improved outcome in multisystem Langerhans cell histiocytosis associated with therapy intensification. *Blood* 2008; 111:2556.
14. Steen AE, Steen KH, Bauer R, Bieber T. Successful treatment of cutaneous Langerhans cell histiocytosis with low-dose methotrexate. *Br J Dermatol* 2001; 145:137.
15. Büchler T, Cervinek L, Belohlavek O, et al. Langerhans cell histiocytosis with central nervous system involvement: follow-up by FDG-PET during treatment with cladribine. *Pediatr Blood Cancer* 2005; 44:286.
16. Ng Wing Tin S, Martin-Duverneuil N, Idbaih A, et al. Efficacy of vinblastine in central nervous system Langerhans cell histiocytosis: a nationwide retrospective study. *Orphanet J Rare Dis* 2011; 6:83.
17. Gadner H, Heitger A, Grois N, et al. Treatment strategy for disseminated Langerhans cell histiocytosis. DAL HX-83 Study Group. *Med Pediatr Oncol* 1994; 23:72.
18. Cantu MA, Lupo PJ, Bilgi M, Hicks MJ, Allen CE, McClain KL. Optimal therapy for adults with Langerhans cell histiocytosis bone lesions. *PLoS ONE*. 2012;7(8):e43257. 58.
19. Haroche J, Cohen-Aubart F, Emile JF, et al. Dramatic efficacy of vemurafenib in both multisystemic and refractory Erdheim-Chester disease and Langerhans cell histiocytosis harboring the BRAF V600E mutation. *Blood* 2013; 121:1495.
20. Haupt R, Nanduri V, Calevo MG, et al. Permanent consequences in Langerhans cell histiocytosis patients: a pilot study from the Histiocyte Society Late Effects Study Group. *Pediatr Blood Cancer*. 2004;42(5):438-444.
21. Minkov M, Steiner M, Pötschger U, et al. Reactivations in multisystem Langerhans cell histiocytosis: data of the international LCH registry. *J Pediatr* 2008; 153:700.
22. Weitzman S, Braier J, Donadieu J, et al. 2'-Chlorodeoxy adenosine (2-CdA) as salvage therapy for Langerhans cell histiocytosis (LCH). results of the LCH-S-98 protocol of the Histiocyte Society. *Pediatr Blood Cancer* 2009; 53:1271.
23. Abraham A, Alsultan A, Jeng M, et al. Clofarabine salvage therapy for refractory high-risk langerhans cell histiocytosis. *Pediatr Blood Cancer* 2013; 60:E19.

24. Weitzman S, Braier J, Donadieu J, et al. 29-Chlorodeoxyadenosine (2-CdA) as salvage therapy for Langerhans cell histiocytosis (LCH). Results of the LCH-S-98 protocol of the Histiocyte Society. *Pediatr Blood Cancer*. 2009;53(7): 1271-1276
25. Bernard F, Thomas C, Bertrand Y, et al. Multi-centre pilot study of 2-chlorodeoxyadenosine and cytosine arabinoside combined chemotherapy in refractory Langerhans cell histiocytosis with haematological dysfunction. *Eur J Cancer* 2005; 41:2682.
26. Donadieu J, Bernard F, van Noesel M, et al. Cladribine and cytarabine in refractory multisystem Langerhans cell histiocytosis: results of an international phase 2 study. *Blood* 2015; 126:1415.
27. Veys PA, Nanduri V, Baker KS, et al. Haematopoietic stem cell transplantation for refractory Langerhans cell histiocytosis: outcome by intensity of conditioning. *Br J Haematol* 2015; 169:711.
28. Steiner M, Matthes-Martin S, Attarbaschi A, et al. Improved outcome of treatment-resistant high-risk Langerhans cell histiocytosis after allogeneic stem cell transplantation with reduced-intensity conditioning. *Bone Marrow Transplant* 2005; 36:215.
29. Haroche J, Charlotte F, Arnaud L, et al. High prevalence of BRAF V600E mutations in Erdheim-Chester disease but not in other non-Langerhans cell histiocytoses. *Blood*. 2012;120 (13) : 2700 – 2703.
30. Badalian-Very G, Vergilio J-A, Degar BA, et al. Recurrent BRAF mutations in Langerhans cell histiocytosis. *Blood*. 2010; 116(11):1919–1923.
31. Satoh T, Smith A, Sarde A, et al. B-RAF mutant alleles associated with Langerhans cell histiocytosis, a granulomatous pediatric disease. *PLoS ONE*. 2012;7(4):e33891.
32. Sahm F, Capper D, Preusser M, et al. BRAFV600E mutant protein is expressed in cells of variable maturation in Langerhans cell histiocytosis. *Blood*. 2012;120(12):e28–e34.
33. Cangi MG, Biavasco R, Cavalli G, et al. BRAFV600E-mutation is invariably present and associated to oncogene-induced senescence in Erdheim-Chester disease. *Ann Rheum Dis*. 2015 Aug;74(8):1596-602.
34. Arnaud L, Gorochov G, Charlotte F, et al. Systemic perturbation of cytokine and chemokine networks in Erdheim-Chester disease: a single-center series of 37 patients. *Blood* 2011; 117:2783.
35. Veyssier-Belot C, Cacoub P, Caparros-Lefebvre D, et al. Erdheim-Chester disease. Clinical and radiologic characteristics of 59 cases. *Medicine (Baltimore)* 1996; 75:157.
36. Eli L, Diamond, Lorenzo Dagna, David M. Hyman et al. Consensus guidelines for the diagnosis and clinical management of Erdheim-Chester disease. *Blood*. 2014 Jul 24; 124(4): 483–492.
37. Drier A, Haroche J, Savatovsky J, et al. Cerebral, facial, and orbital involvement in Erdheim-Chester disease: CT and MR imaging findings. *Radiology* 2010; 255:586.
38. Arnaud L, Pierre I, Beigelman-Aubry C, et al. Pulmonary involvement in Erdheim-Chester disease: a single-center study of thirty-four patients and a review of the literature. *Arthritis Rheum* 2010; 62:3504.
39. Barnes PJ, Foyle A, Haché KA, et al. Erdheim-Chester disease of the breast: a case report and review of the literature. *Breast J* 2005; 11:462.
40. Papo M, Diamond EL, Cohen-Aubart F, et al. High prevalence of myeloid neoplasms in adults with non-Langerhans cell histiocytosis. *Blood* 2017; 130:1007.
41. Haroche J, Cohen-Aubart F, Emile JF, et al. Reproducible and sustained efficacy of targeted therapy with vemurafenib in patients with BRAF(V600E)-mutated Erdheim-Chester disease. *J Clin Oncol* 2015; 33:411.

- 41 Oneal PA, Kwitkowski V, Luo L et al. FDA Approval Summary: Vemurafenib for the Treatment of Patients with Erdheim-Chester Disease with the BRAFV600 Mutation. *Oncologist*. 2018 Dec;23(12):1520-1524.
- 42 Arnaud L, Hervier B, Néel A, et al. CNS involvement and treatment with interferon- α are independent prognostic factors in Erdheim-Chester disease: a multicenter survival analysis of 53 patients. *Blood* 2011; 117:2778.
- 43 Hervier B, Arnaud L, Charlotte F, et al. Treatment of Erdheim-Chester Disease with long-term high-dose interferon- α . *Semin Arthritis Rheum*. 2012;41(6):1-7.
- 44 Nordmann TM, Juengling FD, Recher M, et al. Trametinib after disease reactivation under dabrafenib in Erdheim-Chester disease with both BRAF and KRAS mutations. *Blood* 2017; 129:879.
- 45 Bourke SC, Nicholson AG, Gibson GJ. Erdheim-Chester disease: pulmonary infiltration responding to cyclophosphamide and prednisolone. *Thorax* 2003; 58:1004.
- 46 Goyal G, Shah MV, Call TG, et al. Clinical and Radiologic Responses to Cladribine for the Treatment of Erdheim-Chester Disease. *JAMA Oncol* 2017.
- 47 Aouba A, Georgin-Lavialle S, Pagnoux C, et al. Rationale and efficacy of interleukin-1 targeting in Erdheim-Chester disease. *Blood* 2010; 116:4070.
- 48 Tran TA, Pariente D, Guitton C, et al. Treatment of Erdheim-Chester disease with canakinumab. *Rheumatology (Oxford)* 2014; 53:2312.
- 49 Cohen-Aubart F, Maksud P, Saadoun D, et al. Variability in the efficacy of the IL1 receptor antagonist anakinra for treating Erdheim-Chester disease. *Blood* 2016; 127:1509.
- 50 Janku F, Amin HM, Yang D, et al. Response of histiocytoses to imatinib mesylate: fire to ashes. *J Clin Oncol* 2010; 28:e633.
- 51 Gianfreda D, Nicastro M, Galetti M, et al. Sirolimus plus prednisone for Erdheim-Chester disease: an open-label trial. *Blood* 2015; 126:1163.
- 52 Haroche J, Arnaud L, Cohen-Aubart F, et al. Erdheim-Chester disease. *Rheum Dis Clin North Am*. 2013;39(2):299-311.
- 53 Scott RB, Robb-Smith AHT. Histiocytic medullary reticulosis. *Lancet*. 1939;234(6047):194-198.
- 54 Schram AM, Berliner N. How i treat hemophagocytic lymphohistiocytosis in the adult patient. *Blood*. 2015 May 7;125(19):2908-14.
- 55 Ohadi M, Lalloz MR, Sham P, et al. Localization of a gene for familial hemophagocytic lymphohistiocytosis at chromosome 9q21.3-22 by homozygosity mapping. *Am J Hum Genet*. 1999; 64(1):165-171.
- 56 Voskoboinik I, Smyth MJ, Trapani JA. Perforin-mediated target-cell death and immune homeostasis. *Nat Rev Immunol*. 2006;6(12): 940-952.
- 57 Ueda I, Kurokawa Y, Koike K, Ito S, Sakata A, Matsumora T. Late-onset cases of familial hemophagocytic lymphohistiocytosis with missense perforin gene mutations. *Am J Hematol*. 2007 Jun. 82(6):427-32.
- 58 Rivière S, Galicier L, Coppo P, et al. Reactive hemophagocytic syndrome in adults: a retrospective analysis of 162 patients. *Am J Med* 2014; 127:1118.
- 59 Jordan MB, Allen CE, Weitzman S, Filipovich AH, McClain KL. How I treat hemophagocytic lymphohistiocytosis. *Blood*. 2011;118(15): 4041-4052
- 60 Trottestam H, Horne A, Aricò M, et al. Chemoimmunotherapy for hemophagocytic lymphohistiocytosis: long-term results of the HLH-94 treatment protocol. *Blood* 2011; 118:4577.

- 61 Marsh RA, Vaughn G, Kim MO, et al. Reduced-intensity conditioning significantly improves survival of patients with hemophagocytic lymphohistiocytosis undergoing allogeneic hematopoietic cell transplantation. *Blood* 2010; 116:5824.
- 62 Locatelli F, Jordan MB, Allen CE, et al. Safety and Efficacy of Emapalumab in Pediatric Patients with Primary Hemophagocytic Lymphohistiocytosis. *Blood (ASH Annual Meeting Abstracts)* 2018; 132:LBA6.
- 63 Marsh RA, Allen CE, McClain KL, et al. Salvage therapy of refractory hemophagocytic lymphohistiocytosis with alemtuzumab. *Pediatr Blood Cancer* 2013; 60:101.
- 64 Juskevicius R, and Finlay JL. Rosai-Dorfman disease of the parotid gland, cytologic and histopathologic findings with immunohistochemical correlation. *Arch Pathol Lab Med* 2001; 125: 1348-1350.
- 65 Lu D, Estalilla OC, Manning JT, et al. Sinus Histiocytosis with Massive Lymphadenopathy and Malignant Lymphoma Involving the Same Lymph Node: A Report of Four Cases and Review of the Literature. *Modern Pathol* 2000; 13: 414-419. 7.
- 66 Levine PH, Jahan N, Murari P, et al. Detection of Human Herpesvirus 6 in Tissues Involved by Sinus Histiocytosis with Massive Lymphadenopathy (RosaiDorfman Disease). *J Infect Dis* 1992; 166: 291-295.
- 67 Foucar E, Rosai J. and Dorfman R. Sinus histiocytosis with massive lymphadenopathy (Rosai-Dorfman disease): review of the entity. *Semin Diagn Pathol* 1990; 7: 19-73.
- 68 Lauwers GY, Perez-Atayde A, Dorfman RF, et al. The digestive system manifestations of Rosai-Dorfman disease (sinus histiocytosis with massive lymphadenopathy): review of 11 cases. *Hum Pathol* 2000; 31: 380-385
- 69 Wang KH, Chen WY, Liu HN, et al. Cutaneous Rosai-Dorfman disease: clinicopathological profiles, spectrum and evolution of 21 lesions in six patients. *Br J Dermatol* 2006; 154:277-286.
- 70 Pulsoni A, Anghel G, Falcucci P, et al. Treatment of sinus histiocytosis with massive lymphadenopathy (Rosai-Dorfman disease): report of a case and literature review. *Am J Hematol* 2002; 69: 67-71.
- 71 Tasso M, Esquembre C, Blanco E, et al. Sinus histiocytosis with massive lymphadenopathy (Rosai-Dorfman disease) treated with 2- chlorodeoxyadenosine. *Pediatr Blood Cancer* 2006; 47: 612-615.
- 72 Freyer DR, Kennedy R, Bostrom BC, Kohut G, Dehner LP. Juvenile xanthogranuloma: forms of systemic disease and their clinical implications. *J Pediatr.* 1996 Aug. 129(2):227-37.