

## BÖLÜM 40

# BLASTİK PLAZMASİTOİD DENDRİTİK HÜCRELİ NEOPLAZİ

Ebru KILIÇ GÜNEŞ<sup>1</sup>

### GİRİŞ-TARİHÇE

Blastik Plazmasitoid Dendritik Neoplazi (BPDHN); çok agresif klinik gidişe sahip, cilt tutulumu, kemik iliği tutulumu ve lösemik formda prezente olabilen, nadir görülen bir hematolojik malignitedir (1). Dünya Sağlık Örgütü (WHO) 2016 sınıflamasında (2) ve 2022 yılında yayınlanan WHO Hematopoetik Neoplaziler 5.Güncellemesinde; Myeloid/Dendritik ve Histiyositik Neoplaziler bölümünde ayrı bir başlıkta ele alınmaktadır (3).

İlk olarak 1995 yılında; CD4 pozitif agranüler NK hücreli lösemi olarak tanımlanmıştır (4). 1998 yılında, kutanöz agranüler CD2/CD4+/CD56+ lenfoma terminolojisi kullanılmıştır (5). Morfolojik olarak blastik ve agranüler görünümde olması ve NK hücre markerı olan CD56(+) olması nedeni ile sonrasında blastik NK hücreli lenfoma olarak adlandırılmıştır. 2002 yılında; agranüler CD4+CD56+ hematodermik neoplazm/tümör olarak isimlendirilmiştir (6). 2003 yılında erken plazmasitoid dendritik hücreli lösemi/lenfoma(7) tanımı sonrasında, WHO 2008 güncellemesinde, AML sınıflaması altında blastik plazmasitoid dendritik neoplazi olarak yer almıştır (8).

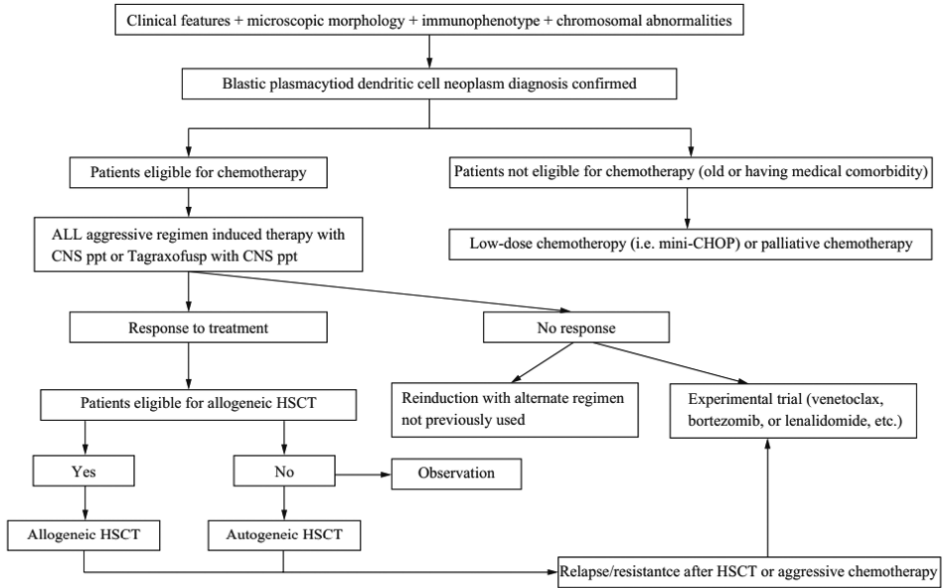
### Epidemiyoloji

Oldukça nadir görülen bir hematolojik neoplazi olması, uzun yıllar terminolojisinin net olmaması nedeni ile tam insidansı bilinmemektedir. Tüm cilt lenfomalarının %0.4'ünü oluşturduğu ifade edilmiş olsa da, cilt tutulumu olmadan da prezente olabilmesi nedeni ile insidansı net bilinmemektedir (9), (10). Tüm yaş gruplarında görülebilmekle birlikte; 6-7. dekattaki erişkinlerde daha sık izlenir ve medyan tanı yaşı 65-67'dir. Erkeklerde kadınlara göre daha fazla görülmektedir (2.5:1) (9). %80-90 vakada izole olarak ortaya çıksa da, hastaların %10-20'sinde bir diğer hematolojik malignitenin (MDS, AML, KMML gibi) seyrinde de görülebilir (10). Dikkat edilmesi gereken bir diğer nokta ise; matür, CD56 negatif

<sup>1</sup> Uzm. Dr., Gülhane Eğitim ve Araştırma Hastanesi Hematoloji Kliniği, ebrukilic83@hotmail.com

BPDHN’de etkinliğini gösteren bir kaç vaka takdimi bulunmaktadır (46). Halen venetoclax’ın BPDHN’de etkinliği araştıran klinik çalışmalar (NCT03485547), venetoclax + tagraxofusp kombinasyon çalışmaları (NCT04216524) ve yine alltta yatan MDS/KMML tanısı olan hastalarda Tagraxofusp + Venetoclax + Azasitidine çalışması da devam etmektedir (NCT04216524).

CD123 hedefleyen CART hücre tedavisi olan MB-102’nin AML, MDS, BPDHN’de çalışmaları (NCT04109482); CD123 ve CD3’e bağlanan bir BiTE olarak geliştirilen XmAb14045’in çalışmaları yine devam eden çalışmalar arasındadır (NCT02730312). Mevcut onaylı tedaviler doğrultusunda, BPDHN tedavi algoritması Şekil 1 ve Şekil 2’de gösterilmiştir.



Şekil 2. Tedavi Algoritması, Cheng et al (48)

## KAYNAKLAR

1. Shi Y, Wang E. Blastic plasmacytoid dendritic cell neoplasm: a clinicopathologic review. Arch Pathol Lab Med. 2014;138(4):564-9.
2. Arber DA, Orazi A, Hasserjian R, Thiele J, Borowitz MJ, Le Beau MM, et al. The 2016 revision to the World Health Organization classification of myeloid neoplasms and acute leukemia. Blood. 2016;127(20):2391-405.
3. Khoury JD, Solary E, Abla O, Akkari Y, Alaggio R, Apperley JF, et al. The 5th edition of the World Health Organization Classification of Haematolymphoid Tumours: Myeloid and Histiocytic/Dendritic Neoplasms. Leukemia. 2022;36(7):1703-19.
4. Brody JP, Allen S, Schulman P, Sun T, Chan WC, Friedman HD, et al. Acute agranular CD4-positive natural killer cell leukemia. Comprehensive clinicopathologic studies including virologic

and in vitro culture with inducing agents. *Cancer*. 1995;75(10):2474-83.

5. Kameoka J, Ichinohasama R, Tanaka M, Miura I, Tomiya Y, Takahashi S, et al. A cutaneous agranular CD2- CD4+ CD56+ "lymphoma": report of two cases and review of the literature. *Am J Clin Pathol*. 1998;110(4):478-88.
6. Petrella T, Comeau MR, Maynadie M, Couillault G, De Muret A, Maliszewski CR, et al. 'Agranular CD4+ CD56+ hematodermic neoplasm' (blastic NK-cell lymphoma) originates from a population of CD56+ precursor cells related to plasmacytoid monocytes. *Am J Surg Pathol*. 2002;26(7):852-62.
7. Jacob MC, Chaperot L, Mossuz P, Feuillard J, Valensi F, Leroux D, et al. CD4+ CD56+ lineage negative malignancies: a new entity developed from malignant early plasmacytoid dendritic cells. *Haematologica*. 2003;88(8):941-55.
8. Vardiman JW, Thiele J, Arber DA, Brunning RD, Borowitz MJ, Porwit A, et al. The 2008 revision of the World Health Organization (WHO) classification of myeloid neoplasms and acute leukemia: rationale and important changes. *Blood*. 2009;114(5):937-51.
9. Petrella T, Bagot M, Willemze R, Beylot-Barry M, Vergier B, Delaunay M, et al. Blastic NK-cell lymphomas (agranular CD4+CD56+ hematodermic neoplasms): a review. *Am J Clin Pathol*. 2005;123(5):662-75.
10. Pagano L, Valentini CG, Pulsoni A, Fisogni S, Carluccio P, Mannelli F, et al. Blastic plasmacytoid dendritic cell neoplasm with leukemic presentation: an Italian multicenter study. *Haematologica*. 2013;98(2):239-46.
11. Zalmai L, Viailly PJ, Biichle S, Cheok M, Soret L, Angelot-Delettre F, et al. Plasmacytoid dendritic cells proliferation associated with acute myeloid leukemia: phenotype profile and mutation landscape. *Haematologica*. 2021;106(12):3056-66.
12. Sapienza MR, Fuligni F, Agostinelli C, Tripodo C, Righi S, Laginestra MA, et al. Molecular profiling of blastic plasmacytoid dendritic cell neoplasm reveals a unique pattern and suggests selective sensitivity to NF-kB pathway inhibition. *Leukemia*. 2014;28(8):1606-16.
13. Reizis B, Bunin A, Ghosh HS, Lewis KL, Sisirak V. Plasmacytoid dendritic cells: recent progress and open questions. *Annu Rev Immunol*. 2011;29:163-83.
14. Ceribelli M, Hou ZE, Kelly PN, Huang DW, Wright G, Ganapathi K, et al. A Druggable TCF4-and BRD4-Dependent Transcriptional Network Sustains Malignancy in Blastic Plasmacytoid Dendritic Cell Neoplasm. *Cancer Cell*. 2016;30(5):764-78.
15. Lee J, Zhou YJ, Ma W, Zhang W, Aljoufi A, Luh T, et al. Lineage specification of human dendritic cells is marked by IRF8 expression in hematopoietic stem cells and multipotent progenitors. *Nat Immunol*. 2017;18(8):877-88.
16. Montero J, Stephansky J, Cai T, Griffin GK, Cabal-Hierro L, Togami K, et al. Blastic Plasmacytoid Dendritic Cell Neoplasm Is Dependent on BCL2 and Sensitive to Venetoclax. *Cancer Discov*. 2017;7(2):156-64.
17. Jegalian AG, Facchetti F, Jaffe ES. Plasmacytoid dendritic cells: physiologic roles and pathologic states. *Adv Anat Pathol*. 2009;16(6):392-404.
18. Trottier AM, Cerquozzi S, Owen CJ. Blastic plasmacytoid dendritic cell neoplasm: challenges and future prospects. *Blood Lymphat Cancer*. 2017;7:85-93.
19. Cota C, Vale E, Viana I, Requena L, Ferrara G, Anemona L, et al. Cutaneous manifestations of blastic plasmacytoid dendritic cell neoplasm-morphologic and phenotypic variability in a series of 33 patients. *Am J Surg Pathol*. 2010;34(1):75-87.
20. Riaz W, Zhang L, Horna P, Sokol L. Blastic plasmacytoid dendritic cell neoplasm: update on molecular biology, diagnosis, and therapy. *Cancer Control*. 2014;21(4):279-89.
21. Pagano L, Valentini CG, Grammatico S, Pulsoni A. Blastic plasmacytoid dendritic cell neoplasm: diagnostic criteria and therapeutical approaches. *Br J Haematol*. 2016;174(2):188-202.
22. Marafioti T, Paterson JC, Ballabio E, Reichard KK, Tedoldi S, Hollowood K, et al. Novel markers of normal and neoplastic human plasmacytoid dendritic cells. *Blood*. 2008;111(7):3778-92.
23. Herling M, Teitell MA, Shen RR, Medeiros LJ, Jones D. TCL1 expression in plasmacytoid dendri-

- tic cells (DC2s) and the related CD4+ CD56+ blastic tumors of skin. *Blood*. 2003;101(12):5007-9.
24. Assaf C, Gellrich S, Whittaker S, Robson A, Cerroni L, Massone C, et al. CD56-positive haematological neoplasms of the skin: a multicentre study of the Cutaneous Lymphoma Project Group of the European Organisation for Research and Treatment of Cancer. *J Clin Pathol*. 2007;60(9):981-9.
  25. Garnache-Ottou F, Feuillard J, Ferrand C, Biichle S, Trimoreau F, Seilles E, et al. Extended diagnostic criteria for plasmacytoid dendritic cell leukaemia. *Br J Haematol*. 2009;145(5):624-36.
  26. Rauh MJ, Rahman F, Good D, Silverman J, Brennan MK, Dimov N, et al. Blastic plasmacytoid dendritic cell neoplasm with leukemic presentation, lacking cutaneous involvement: Case series and literature review. *Leuk Res*. 2012;36(1):81-6.
  27. Julia F, Petrella T, Beylot-Barry M, Bagot M, Lipsker D, Machel L, et al. Blastic plasmacytoid dendritic cell neoplasm: clinical features in 90 patients. *Br J Dermatol*. 2013;169(3):579-86.
  28. Garnache-Ottou F, Vidal C, Biichle S, Renosi F, Poret E, Pagadoy M, et al. How should we diagnose and treat blastic plasmacytoid dendritic cell neoplasm patients? *Blood Adv*. 2019;3(24):4238-51.
  29. Taylor J, Haddadin M, Upadhyay VA, Grussie E, Mehta-Shah N, Brunner AM, et al. Multicenter analysis of outcomes in blastic plasmacytoid dendritic cell neoplasm offers a pretargeted therapy benchmark. *Blood*. 2019;134(8):678-87.
  30. Dalle S, Beylot-Barry M, Bagot M, Lipsker D, Machel L, Joly P, et al. Blastic plasmacytoid dendritic cell neoplasm: is transplantation the treatment of choice? *Br J Dermatol*. 2010;162(1):74-9.
  31. Pileri A, Delfino C, Grandi V, Agostinelli C, Pileri SA, Pimpinelli N. Blastic plasmacytoid dendritic cell neoplasm (BPDCN): the cutaneous sanctuary. *G Ital Dermatol Venereol*. 2012;147(6):603-8.
  32. Suzuki R, Nakamura S, Suzumiya J, Ichimura K, Ichikawa M, Ogata K, et al. Blastic natural killer cell lymphoma/leukemia (CD56-positive blastic tumor): prognostication and categorization according to anatomic sites of involvement. *Cancer*. 2005;104(5):1022-31.
  33. Feuillard J, Jacob MC, Valensi F, Maynadie M, Gressin R, Chaperot L, et al. Clinical and biologic features of CD4(+)CD56(+) malignancies. *Blood*. 2002;99(5):1556-63.
  34. Reimer P, Rudiger T, Kraemer D, Kunzmann V, Weissinger F, Zettl A, et al. What is CD4+CD56+ malignancy and how should it be treated? *Bone Marrow Transplant*. 2003;32(7):637-46.
  35. Martin-Martin L, Lopez A, Vidriales B, Caballero MD, Rodrigues AS, Ferreira SI, et al. Classification and clinical behavior of blastic plasmacytoid dendritic cell neoplasms according to their maturation-associated immunophenotypic profile. *Oncotarget*. 2015;6(22):19204-16.
  36. Kim MJ, Nasr A, Kabir B, de Nanassy J, Tang K, Menzies-Toman D, et al. Pediatric Blastic Plasmacytoid Dendritic Cell Neoplasm: A Systematic Literature Review. *J Pediatr Hematol Oncol*. 2017;39(7):528-37.
  37. Aoki T, Suzuki R, Kuwatsuka Y, Kako S, Fujimoto K, Taguchi J, et al. Long-term survival following autologous and allogeneic stem cell transplantation for blastic plasmacytoid dendritic cell neoplasm. *Blood*. 2015;125(23):3559-62.
  38. Roos-Weil D, Dietrich S, Boumendil A, Polge E, Bron D, Carreras E, et al. Stem cell transplantation can provide durable disease control in blastic plasmacytoid dendritic cell neoplasm: a retrospective study from the European Group for Blood and Marrow Transplantation. *Blood*. 2013;121(3):440-6.
  39. Kharfan-Dabaja MA, Reljic T, Murthy HS, Ayala E, Kumar A. Allogeneic Hematopoietic Cell Transplantation Is an Effective Treatment for Blastic Plasmacytoid Dendritic Cell Neoplasm in First Complete Remission: Systematic Review and Meta-analysis. *Clin Lymphoma Myeloma Leuk*. 2018;18(11):703-9 e1.
  40. Frankel AE, McCubrey JA, Miller MS, Delatte S, Ramage J, Kiser M, et al. Diphtheria toxin fused to human interleukin-3 is toxic to blasts from patients with myeloid leukemias. *Leukemia*. 2000;14(4):576-85.
  41. Frankel AE, Woo JH, Ahn C, Pemmaraju N, Medeiros BC, Carraway HE, et al. Activity of SL-

- 401, a targeted therapy directed to interleukin-3 receptor, in blastic plasmacytoid dendritic cell neoplasm patients. *Blood*. 2014;124(3):385-92.
42. Pemmaraju N, Lane AA, Sweet KL, Stein AS, Vasu S, Blum W, et al. Tagraxofusp in Blastic Plasmacytoid Dendritic-Cell Neoplasm. *N Engl J Med*. 2019;380(17):1628-37.
43. Pemmaraju N, Konopleva M. Approval of tagraxofusp-erzs for blastic plasmacytoid dendritic cell neoplasm. *Blood Adv*. 2020;4(16):4020-7.
44. Angelova E, Audette C, Kovtun Y, Daver N, Wang SA, Pierce S, et al. CD123 expression patterns and selective targeting with a CD123-targeted antibody-drug conjugate (IMGN632) in acute lymphoblastic leukemia. *Haematologica*. 2019;104(4):749-55.
45. DiPippo AJ, Wilson NR, Pemmaraju N. Targeting CD123 in BPDCN: an emerging field. *Expert Rev Hematol*. 2021;14(11):993-1004.
46. Agha ME, Monaghan SA, Swerdlow SH. Venetoclax in a Patient with a Blastic Plasmacytoid Dendritic-Cell Neoplasm. *N Engl J Med*. 2018;379(15):1479-81.
47. Zhang Y, Sokol L. Clinical Insights into the Management of Blastic Plasmacytoid Dendritic Cell Neoplasm. *Cancer Manag Res*. 2022;14:2107-17.
48. Cheng W, Yu TT, Tang AP, He Young K, Yu L. Blastic Plasmacytoid Dendritic Cell Neoplasm: Progress in Cell Origin, Molecular Biology, Diagnostic Criteria and Therapeutic Approaches. *Curr Med Sci*. 2021;41(3):405-19.