

30. BÖLÜM

İMMÜN YETMEZLİK ZEMİNİNDE OLUŞAN LENFOPROLİFERATİF BOZUKLUKLAR

Fatoş TEKELİOĞLU¹

GİRİŞ

Konjenital, kazanılmış veya iatrogenik nedenlere bağlı olarak gelişen immün yetmezlik olgularında normal popülasyona oranla lenfoproliferatif gelişme riski daha siktir. İmmünyetmezlik ilişkili lenfoproliferatif hastalıklar Dünya Sağlık Örgütü hematopoietik ve lenfoid tümör sınıflamasında ayrı bir başlık olarak yer almaktadır. Altta yatan nedene bağlı olarak klinik ve patolojik özellikleri farklılıklar içerir.

Ancak gelişen lenfomaların çoğu B lenfosit kaynaklı olup agresiv histopatolojik özellikler taşımaktadır. Sıklıkla Epstein-Barr virüs (EBV) ile ilişkilidir. İmmünyetmezlikli hastalarda sitotoksik T lenfositler tarafından EBV'ye karşı yanıtın bozukluğu sonucu, EBV enfekte B hücrelerinin çoğalması kontrol dışı hal almaktadır (1-3).

İmmün yetmezlikli hastalarda; onkojenik ve tümör baskılıyıcı genlerdeki kalıtımsal veya sonradan kazanılan genetik değişiklikler, kronik antijenik uyarı, onkojenik virüs enfeksiyonları, lenfoproliferatif hastalığa yol açabilen diğer faktörlerdir (4). Ekstranodal bölge tutulumu diğer lenfomalara oranla progresyon daha hızlı ve tedaviye yanıtları kötüdür.

DSÖ tarafından immünyetmezlik ilişkili lenfoproliferatif hastalıklar 4 ana gruba ayrılmıştır (5).

1. Primer immün bozukluklar ile ilişkili lenfoproliferatif hastalıklar
2. İnsan İmmün Yetmezlik Virüsü (Human immunodeficiency virus, HIV) Enfeksiyonu ile ilişkili Lenfomalar
3. Nakil sonrası lenfoproliferatif bozukluklar (NSLB)
4. Diğer İatrogenik immün yetmezlik ile ilişkili lenfoproliferatif bozukluklar

1. PRİMER İMMÜN BOZUKLUKLAR İLE İLİŞKİLİ LENFOPROLİFERATİF HASTALIKLAR

Primer immün bozukluk (PİB) ile ilişkili lenfoproliferatif hastalıklar primer immün yetmezliğine veya immün düzenleme bozukluklarına bağlı immün yetmezlik koşullarında ortaya çıkar. 60'tan fazla PİB'in patoloji ve patogenezi heterojen olduğu için bu lenfoproliferatif hastalıklarda tablo oldukça değişkendir. Lenfoproliferatif hastalıklara en sık ilişkiye sahip PİB'ler; Ataksi-Telenjektazi (AT), Wiskot-Aldrich Sendromu (WAS), Yaygın Değişken İmmün Yetmezlik (YDİY), Şiddetli Kombine İmmün Yetmezlik

¹ Uzm. Dr., Sağlık Bilimleri Üniversitesi Kayseri Şehir Hastanesi, Tibbi Patoloji, fatosyaldizli@hotmail.com

EBV pozitifliği ive DBBHL-dışı lenforproliferatif hastalık ile ilişkili iken >70 hasta yaşı ve DBBHL tipi daha kısa sağ kalım göstergesidir (73).

SONUÇ

Sonuç olarak immün yetmezlik durumu klinik olarak bilinen veya şüphe edilen olgularda ayrıntılı klinik anamnez ile birlikte patolojik değerlendirilmelerinin birlikte yapılması doğru tanı açısından oldukça yardımcı ve gereklidir. İlave edilmesi veya ilave edilmemesi gereken kemoterapotik ajanlar olguların takip ve tedavisinde sağ kalım durumunda büyük rol sahibidirler.

KAYNAKLAR

- Okano M, Gross TG., (2001) From Burkitt's lymphoma to chronic active Epstein-Bar virus infection: An expanding spectrum of EBV-associated disease. *Pediatr Hematol Oncol* 2001;18:427-42
- Cohen JI.(2000),Epstein-Barr virus infection. *N Engl J Med*;343:481-92
- Swinnen LJ., (2000)Diagnosis and treatment of transplant-related lymphoma. *Ann Oncol*;11:s45-8
- Tran H. Nourse J.,et al.,(2008),Immunodeficiency-Associated Lymphomas.*Blood Reviews* ;22:261-281
- Swerdlow S., Campo E.,Harris N., et al.(2008),WHO Classification of tumors of haematopoietic and lymphoid tissue 4th ed. Bosman F., Jaffe E., Lakhani S., Editors ,Lyon France ;
- Jonkman-Berk BM, van den Berg JM, Ten Berge IJ, et al. (2015). Primary immunodeficiencies in the Netherlands: national patient data demonstrate the increased risk of malignancy. *Clin Immunol*. 156:154- 62.
- Shapiro RS (2011). Malignancies in the setting of primary immunodeficiency: Implications for hematologists/oncologists. *Am J Hematol*. 86:48- 55
- Leechawengwongs E., Shearer WT.,(2012), Lymphoma complicating primary immunodeficiency syndromes *Curr Opin Hematol* ; 19:305-312
- Arico M, Mussolini L, Carraro E, et al. (2015). Non-Hodgkin lymphoma in children with an associated inherited condition: A retrospective analysis of the Associazione Italiana Ematologia Oncologia Pediatrica (AIEOP). *Pediatr Blood Cancer*. 62:1782- 9.
- Jones AM, Gaspar HB (2000). Immunogenetics: changing the face of immunodeficiency. *J Clin Pathol*. 53:60- 5
- Notarangelo L, Casanova JL, Conley ME, et al. (2006). Primary immunodeficiency diseases: an update from the International Union of Immunological Societies Primary Immunodeficiency Diseases Classification Committee Meeting in Budapest, 2005. *J Allergy Clin Immunol*. 117:883-96.
- Akhter A, Mahe E, Street L, et al. (2015). CD10-positive mantle cell lymphoma: biologically distinct entity or an aberrant immunophenotype? Insight, through gene expression profile in a unique case series. *J Clin Pathol*. 68:844-8.
- Aguilar C, Beltran B, Quinones P, et al. (2015). Large B-cell lymphoma arising in cardiac myxoma or intracardiac fibrinous mass: a localized lymphoma usually associated with Epstein-Barr virus? *Cardiovasc Pathol*. 24:60-4
- Jaffe ES, Wilson WH (1997). Lymphomatoid granulomatosis: pathogenesis, pathology and clinical implications. *Cancer Surv*. 30:233- 48.
- Inwald DP, Peters MJ, Walshe D, et al. (2000). Absence of platelet CD40L identifies patients with X-linked hyper IgM syndrome. *Clin Exp Immunol*. 120:499-502
- Bosticardo M., Marangoni F., Aiuti A.(2009);Recent advances in understanding the pathophysiology of Wiskott-Aldrich syndrome.*Blood*;113:6288-6295
- Lim MS, Straus SE, Dale JK, et al. (1998). Pathological findings in human autoimmune lymphoproliferative syndrome. *Am J Pathol*. 153:1541-50
- Sneller MC, Wang J, Dale JK, et al. (1997). Clinical, immunologic, and genetic features of an autoimmune lymphoproliferative syndrome associated with abnormal lymphocyte apoptosis. *Blood*. 89:1341-8.
- Jaffe ES, Puck JM, Jackson CE, et al. (1999). Increased risk for diverse lymphomas in autoimmune lymphoproliferative syndrome (OILS), an inherited disorder due to defective lymphocyte apoptosis. *Blood*. 94:597
- Elenitoba-Johnson KS, Jaffe ES (1997). Lymphoproliferative disorders associated with congenital immunodeficiencies. *Semin Diagn Pathol*. 14:35-47.
- Suarez F, Mahlaoui N, Canioni D, et al. (2015). Incidence, presentation, and prognosis of malignancies in ataxia-telangiectasia: a report from the French national registry of primary immune deficiencies. *J Clin Oncol*. 33:202- 8.
- Carney JP, Maser RS, Olivares H, et al. (1998). The hMre11/hRad50 protein complex and Nijmegen breakage syndrome: linkage of double-strand break repair to the cellular DNA damage response. *Cell*. 93:477-86.
- (2000),Nijmegen breakage syndrome; the International Nijmegen Breakage Syndrome Study Group . *Arch Dis Child*. 82:400-6.
- Varettini M, Zibellini S, Arcaini L, et al. (2013). MYD88 (L265P) mutation is an independent risk factor for progression in patients with IgM monoclonal gammopathy of undetermined significance. *Blood*. 122:2284-5.
- Desar IM, Keuler M, Raemaekers JM, et al. (2006). Extramedullary marginal zone (MALT) lymphoma in common variable immunodeficiency. *Neth J Med*. 64:136-40.
- Vajdic CM, Mao L, van Leeuwen MT, et al. (2010). Are antibody deficiency disorders associated with a narrower range of cancers than other forms of immunodeficiency? *Blood*. 116:1 228- 34.
- Gilmour KC, Gaspar HB (2003). Pathogenesis and diagnosis of X-linked lymphoproliferative disease. *Expert Rev Mol Diagn*. 3:S49-61.
- Purtilo DT, Strobach RS, Okano M, et al. (1992). Epstein-Barr virus-associated lymphoproliferative disorders. *Lab Invest*. 67:5- 23

29. Laszewski MJ, Kemp JD, Goeken JA, et al. (1990). Clonal immunoglobulin gene rearrangement in nodular lymphoid hyperplasia of the gastrointestinal tract associated with common variable immunodeficiency. *Am J Clin Pathol.* 94:338-43
30. Sander CA, Medeiros LJ, Weiss LM, et al. (1992). Lymphoproliferative lesions in patients with common variable immunodeficiency syndrome. *Am J Surg Pathol.* 16:1170- 82
31. van der Velden WJ, Nissen L, van Rijn M, et al. (2015). Identification of IG-clonality status as a pre-treatment predictor for mortality in patients with immunodeficiency-associated Epstein-Barr virus-related lymphoproliferative disorders. *Haematologica.* 100:e152-4.
32. llowite NT, Fligner CL, Ochs HD, et al. (1986). Pulmonary angiitis with atypical lymphoreticular infiltrates in Wiskott-Aldrich syndrome: possible relationship of lymphomatoid granulomatosis and EBV infection. *Clin Immunol Immunopathol.* 41:479
33. Taylor AM, Metcalfe JA, Thick J, et al. (1996). Leukemia and lymphoma in ataxia telangiectasia. *Blood.* 87:423-38
34. Peters AM, Kohfink B, Martin H, et al. (1999). Defective apoptosis due to a point mutation in the death domain of CD95 associated with autoimmune lymphoproliferative syndrome, T-cell lymphoma, and Hodgkin's disease. *Exp Hematol.* 27:868- 74.
35. Straus SE, Jaffe ES, Puck JM, et al. (2001). The development of lymphomas in families with autoimmune lymphoproliferative syndrome with germline Fas mutations and defective lymphocyte apoptosis. *Blood.* 98:194--200.
36. Said JW (2007). Immunodeficiency-related Hodgkin lymphoma and its mimics. *Adv Anat Pathol.* 14:189-94
37. Gilmour KC, Cranston T, Jones A, et al. (2000). Diagnosis of X-linked lymphoproliferative disease by analysis of SLAM-associated protein expression. *Eur J Immunol.* 30:1691-7.
38. Tangye SG, Phillips JH, Lanier LL, et al. (2000). Functional requirement for SAP in 2B4-mediated activation of human natural killer cells as revealed by the X-linked lymphoproliferative syndrome. *J Immunol.* 165:2932-6.
39. Duplantier JE, Seyama K, Day NK, et al. (2001). Immunologic reconstitution following bone marrow transplantation for X-linked hyper IgM syndrome. *Clin Immunol.* 98:313-8.
40. Hadzic N, Pagliuca A, Rela M, et al. (2000). Correction of the hyper-IgM syndrome after liver and bone marrow transplantation. *N Engl J Med.* 342:320-4
41. Wilson WH, Kingma DW, Raffeld M, et al. (1996). Association of lymphomatoid granulomatosis with Epstein-Barr viral infection of B lymphocytes and response to interferon-alpha 2b. *Blood.* 87:4531-7
42. Dunleavy K.,Wilson W. H., (2012);How I treat HIV-associated lymphoma.Blood Journal 119:3245-3255
43. Engels EA, Pfeiffer RM, Goedert JJ, et al. (2006). Trends in cancer risk among people with AIDS in the United States 1980-2002. *AIDS.* 20:1645-54.
44. Besson C, Goubar A, Gabarre J, et al. (2001). Changes in AIDS-related lymphoma since the era of highly active antiretroviral therapy. *Blood.* 98:2339-44
45. Biggar RJ, Chaturvedi AK, Goedert JJ, et al. (2007). AIDS-related cancer and severity of immunosuppression in persons with AIDS. *J Natl Cancer Inst.* 99:962-72
46. Shiels MS, Koritzinsky EH, Clarke CA, et al. (2014). Prevalence of HIV Infection among U.S. Hodgkin lymphoma cases. *Cancer Epidemiol Biomarkers Prev.* 23:274-81.
47. Carbone A (2003). Emerging pathways in the development of AIDS-related lymphomas. *Lancet Oncol.* 4:22-9.
48. Carbone A, Gloghini A (2005). AIDS-related lymphomas: from pathogenesis to pathology. *Br J Haematol.* 130:662- 70
49. Hamilton-Dutoit SJ, Raphael M, Audouin J, et al. (1993). In situ demonstration of EpsteinBarr virus small RNAs (EBER 1) in acquired immunodeficiency syndrome-related lymphomas: correlation with tumor morphology and primary site. *Blood.* 82:619-24
50. Cesarman E, Chang Y, Moore PS, et al. (1995). Kaposi's sarcoma-associated herpesvirus-like DNA sequences in AIDS-related body-cavity-based lymphomas. *N Engl J Med.* 332:1186-91.
51. Beylot-Barry M, Vergier B, Masquelier B, et al. (1999). The Spectrum of Cutaneous Lymphomas in HIV infection: a study of 21 cases. *Am J Surg Pathol.* 23:1208-16.
52. Hishima T, Oyaizu N, Fujii T, et al. (2006). Decrease in Epstein-Barr virus-positive AIDS-related lymphoma in the era of highly active antiretroviral therapy. *Microbes Infect.* 8:1301-7
53. Raphael MM, Audouin J, Lamine M, et al. (1994). Immunophenotypic and genotypic analysis of acquired immunodeficiency syndrome-related non-Hodgkin's lymphomas. Correlation with histologic features in 36 cases. *Am J Clin Pathol.* 101 :773-82
54. Camilleri-Broet S, Davi F, Feuillard J, et al. (1997). AIDS-related primary brain lymphomas: histopathologic and immunohistochemical study of 51 cases. *Hum Pathol.* 28:367- 74.
55. Cao Y, Hunter ZR, Liu X, et al. (2015). CXCR4 WHIM-like frameshift and nonsense mutations promote ibrutinib resistance but do not supplant MYD88(L265P)-directed survival signalling in Waldenstrom macroglobulinaemia cells. *Br J Haematol.* 168:701-7.
56. Morscjo J, Dierickx D, Nijs J, et al. (2014). Clinicopathologic comparison of plasmablastic lymphoma in HIV-positive, immunocompetent, and posttransplant patients: single-center series of 25 cases and meta-analysis of 277 reported cases. *Am J Surg Pathol.* 38:875-86
57. Castillo JJ, Bibas M, Miranda RN (2015). The biology and treatment of plasmablastic lymphoma. *Blood.* 125:2323-30.
58. Hoffmann C, Henrich M, Gillor D, et al. (2015). Hodgkin lymphoma is as common as non-Hodgkin lymphoma in HIV-positive patients with sustained viral suppression and limited immune deficiency: a prospective cohort study. *HIV Med.* 16:261-4
59. Lanoy E, Rosenberg PS, Fily F, et al. (2011). HIV-associated Hodgkin lymphoma during the first months on combination antiretroviral therapy. *Blood.* 118:44-9.

60. Hartmann S, Jakobus C, Rengstl 8, et al. (2013). Spindle-shaped CD163+ rosetting macrophages replace CD4+ T-cells in HIV-related classical Hodgkin lymphoma. *Mod Pathol.* 26:648-57
61. Gaillard S, Lelong C, Pessonne F, et al. (2006). Post-transplant lymphoproliferative disorders occurring after renal transplantation in adults: report of 230 cases from the French Registry. *Am J Transplant.* 6:2735-42
62. Opelz G, Dahler B (2004). Lymphomas after solid organ transplantation: a collaborative transplant study report. *Am J Transplant.* 4:222-30
63. Gibson SE, Swerdlow SH, Craig FE, et al. (2011). EBV-positive extranodal marginal zone lymphoma of mucosa-associated lymphoid tissue in the posttransplant setting: a distinct type of posttransplant lymphoproliferative disorder? *Am J Surg Pathol.* 3S:B07-1S
64. Trappe R, Zimmermann H, Fink S, et al. (2011). Plasmacytoma-like post-transplant lymphoproliferative disorder, a rare subtype of monomorphic B-cell post-transplant lymphoproliferation, is associated with a favorable outcome in localized as well as in advanced disease: a prospective analysis of 8 cases . *Haematologica.* 96:1067-71
65. Nelson BP, Wolniak KL, Evens A, et al. (2012). Early posttransplant lymphoproliferative disease: clinicopathologic features and correlation with mTOR signaling pathway activation. *Am J Clin Pathol.* 138:568-78
66. Frizzera G, Hanto DW, Gajl-Peczalska KJ, et al. (1981). Polymorphic diffuse B-cell hyperplasias and lymphomas in renal transplant recipients. *Cancer Res.* 41 :4262-79
67. Ange lot-Delettre F, Roggy A, Frankel AE, et al. (2015). In vivo and in vitro sensitivity of blastic plasmacytoid dendritic cell neoplasm to SL-401, an interleukin-3 receptor targeted biologic agent. *Haematologica.* 100:223-30
68. Salloum E, Cooper DL, Howe G, et al. (1996). Spontaneous regression of lymphoproliferative disorders in patients treated with methotrexate for rheumatoid arthritis and other rheumatic diseases. *J Clin Oncol.* 14:1943-9.
69. Subramaniam K, D'Rozario J, Pavli P (2013). Lymphoma and other lymphoproliferative disorders in inflammatory bowel disease: a review. *J Gastroenterol Hepatol.* 28:24--30.
70. Baeklund E, Sundstrom C, Ekbom A, et al. (2003). Lymphoma subtypes in patients with rheumatoid arthritis: increased proportion of diffuse large B cell lymphoma. *Arthritis Rheum.* 48:1543- 50.
71. Kelsen J, Dige A, Schwindt H, et al. (2011). Infliximab induces clonal expansion of yi5-T cells in Crohn's disease: a predictor of lymphoma risk? *PLoS One.* 6:e17890.
72. Ichikawa A, Arakawa F, Kiyasu J, et al. (2013). Methotrexate/iatrogenic lymphoproliferative disorders in rheumatoid arthritis: histology, Epstein-Barr virus, and clonality are important predictors of disease progression and regression. *Eur J Haematol.* 91 :20-8.