

Bölüm 29

PRİMER AMİLOİDOZDA TEDAVİ

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GİRİŞ

Amiloidoz, yanlış katlanmış proteinlerin doku infiltrasyonu ile karakterize heterojen bir hastalık grubudur. Amiloidoz birikintilerinin protein altbirim bileşimine göre sınıflandırılmaktadırlar. Bu bölümde plazma hücre diskrazisi olan primer sistemik hafif zincir (AL) amiloidozu tedavisi değerlendirilecektir. AL amiloidozunda tedavinin asıl amacı organ işlevini iyileştirmek ve hastanın sağkalımını uzatmaktır. Tedavi ile patolojik plazma hücreleri yok edilmesi ve dolaşımdaki serbest hafif zincirin ortadan kaldırılması hedeflenmektedir.^[1] Tedavi seçimi hastanın yaşı, komorbiditeleri, organ tutulumu, tedavi amacı ve hastanın istekleri doğrultusunda düzenlenmelidir.^[2]

AL AMİLOİDOZUNDA TEDAVİ SEÇENEKLERİ

AL amiloid hastası için tedaviyi değerlendirmedeki ilk adım kök hücre nakli için uygunluğunun belirlenmesidir.^[3] Transplant uygunluğu hastanın yaşı (<70yaş), troponin T düzeyi (<0,06mcg/L), GFR (>40cc/dk) ve sistolik kan basıncına (>100) göre değerlendirilir. Yeni tanı alan hastaların yaş, kalp ve böbrek yetmezliği nedeni ile en fazla %25'i transplant adayı olabilmektedir.^[3] Diğer hastalar ise sistemik kemoterapi tedavisi adaydır.

AL amiloidozun tedavisi için kemoterapi kullanılmaya başlanması 1972'de uygulamaya başlandı.^[4] AL amiloidozda kemoterapinin ilk amacı, toksisiteyi ve tedaviyle ilişkili mortaliteyi en aza indirirken, mümkün olduğu kadar çabuk yeterli ve dayanıklı bir hematolojik yanıt elde etmektir.^[2] Kemoterapi uygulaması sonrası amiloid birikiminde gerileme olabileceği gösterilmiştir.^[5] Sonuç olarak erken tanı koymak ve tedaviye zamanında başlamak doku organ hasarlarının daha

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bortezomib bazlı olmalıdır.^[3] Kırılğan hastalar için, melfalan ve deksametazon ile oral tedavi uygundur. İkinci basamak tedavide immünomodülatör bazlı tedaviler veya daratumumab gibi yanıt oranı yüksek ajanlar akılda bulundurulmalıdır. Anti-amiloid antikörleri umut vaad etmekte olup, bu hastaların gelecekteki yönetiminde potansiyel rol oynayacakları düşünülmektedir. Bu konuda daha geniş, prospektif çalışmaların yapılmasına ihtiyaç duyulmaktadır.

Anahtar Kelimeler: amiloidoz, AL, tedavi

KAYNAKÇA

1. Rosenzweig, M. and H. Landau, Light chain (AL) amyloidosis: update on diagnosis and management. *Journal of hematology & oncology*, 2011. 4(1): p. 47.
2. Wechalekar, A.D., et al., Guidelines on the management of AL amyloidosis. *British journal of haematology*, 2015. 168(2): p. 186-206.
3. Gertz, M.A., Immunoglobulin light chain amyloidosis diagnosis and treatment algorithm 2018. *Blood cancer journal*, 2018. 8(5).
4. Jones, N., et al., Treatment of "primary" renal amyloidosis with melphalan. *The Lancet*, 1972. 300(7778): p. 616-619.
5. Van Gameren, I.I., et al., Histological regression of amyloid in AL amyloidosis is exclusively seen after normalization of serum free light chain. *haematologica*, 2009. 94(8): p. 1094-1100.
6. Özsan, G.H.(2014). AMİLOİDOZDA HEMATOPOETİK KÖK HÜCRE NAKLİ. 8. Ulusal kemik iliği transplantasyonu ve kök hücre tedavileri kongresi, 6-8 Mart 2014, Antalya, (p. 25-27).
7. Gertz, M.A., R.A. Kyle, and P.R. Greipp, Response rates and survival in primary systemic amyloidosis. *Blood*, 1991. 77(2): p. 257-262.
8. Palladini, G., et al., Association of melphalan and high-dose dexamethasone is effective and well tolerated in patients with AL (primary) amyloidosis who are ineligible for stem cell transplantation. *Blood*, 2004. 103(8): p. 2936-2938.
9. Sher, T., S.R. Hayman, and M.A. Gertz, Treatment of primary systemic amyloidosis (AL): role of intensive and standard therapy. *Clin Adv Hematol Oncol*, 2012. 10(10): p. 644-651.
10. Palladini, G., et al., Oral melphalan and dexamethasone grants extended survival with minimal toxicity in AL amyloidosis: long-term results of a risk-adapted approach. *Haematologica*, 2014. 99(4): p. 743-750.
11. LeBlanc, R., et al., Proteasome inhibitor PS-341 inhibits human myeloma cell growth in vivo and prolongs survival in a murine model. *Cancer research*, 2002. 62(17): p. 4996-5000.
12. Muchtar, E., et al., Interphase fluorescence in situ hybridization in untreated AL amyloidosis has an independent prognostic impact by abnormality type and treatment category. *Leukemia*, 2017. 31(7): p. 1562.
13. Wechalekar, A.D., et al., Efficacy of bortezomib in systemic AL amyloidosis with relapsed/refractory clonal disease. *Haematologica*, 2008. 93(2): p. 295-298.
14. Kastritis, E., et al., Bortezomib with or without dexamethasone in primary systemic (light chain) amyloidosis. *Journal of Clinical Oncology*, 2010. 28(6): p. 1031-1037.
15. Mikhael, J.R., et al., Cyclophosphamide-bortezomib-dexamethasone (CyBorD) produces rapid and complete hematologic response in patients with AL amyloidosis. *Blood*, 2012. 119(19): p. 4391-4394.
16. Merlini, G., et al., Long-term outcome of a phase 1 study of the investigational oral proteasome inhibitor (PI) ixazomib at the recommended phase 3 dose (RP3D) in patients (Pts) with relapsed or refractory systemic light-chain (AL) amyloidosis (RRAL). 2014, Am Soc Hematology.
17. Seldin, D.C., et al., Tolerability and efficacy of thalidomide for the treatment of patients with light chain-associated (AL) amyloidosis. *Clinical lymphoma*, 2003. 3(4): p. 241-246.
18. Wechalekar, A.D., et al., Safety and efficacy of risk-adapted cyclophosphamide, thalidomide, and dexamethasone in systemic AL amyloidosis. *Blood*, 2007. 109(2): p. 457-464.

19. Sanchorawala, V., et al., Lenalidomide and dexamethasone in the treatment of AL amyloidosis: results of a phase 2 trial. *Blood*, 2007. 109(2): p. 492-496.
20. Kastritis, E., et al., A phase 1/2 study of lenalidomide with low-dose oral cyclophosphamide and low-dose dexamethasone (RdC) in AL amyloidosis. *Blood*, 2012. 119(23): p. 5384-5390.
21. Moreau, P., et al., Lenalidomide in combination with melphalan and dexamethasone in patients with newly diagnosed AL amyloidosis: a multicenter phase 1/2 dose-escalation study. *Blood*, 2010. 116(23): p. 4777-4782.
22. Kumar, S.K., et al., Lenalidomide, cyclophosphamide, and dexamethasone (CRd) for light-chain amyloidosis: long-term results from a phase 2 trial. *Blood*, 2012. 119(21): p. 4860-4867.
23. Dispenzieri, A., et al., Activity of pomalidomide in patients with immunoglobulin light-chain amyloidosis. *Blood*, 2012. 119(23): p. 5397-5404.
24. Zhu, H. and A. Almasan, Development of venetoclax for therapy of lymphoid malignancies. *Drug design, development and therapy*, 2017. 11: p. 685.
25. Tsujimoto, Y., et al., Involvement of the bcl-2 gene in human follicular lymphoma. *Science*, 1985. 228(4706): p. 1440-1443.
26. Leung, N., S.D. Thomé, and A. Dispenzieri, Venetoclax induced a complete response in a patient with immunoglobulin light chain amyloidosis plateaued on cyclophosphamide, bortezomib and dexamethasone. *haematologica*, 2018. 103(3): p. e135-e137.
27. Bochtler, T., et al., Evaluation of the cytogenetic aberration pattern in amyloid light chain amyloidosis as compared with monoclonal gammopathy of undetermined significance reveals common pathways of karyotypic instability. *Blood*, 2008. 111(9): p. 4700-4705.
28. Bryce, A.H., et al., Translocation t(11; 14) and survival of patients with light chain (AL) amyloidosis. *haematologica*, 2009. 94(3): p. 380-386.
29. Richards, D.B., et al., Repeat doses of antibody to serum amyloid P component clear amyloid deposits in patients with systemic amyloidosis. *Science translational medicine*, 2018. 10(422): p. eaan3128.
30. Sher, T., et al., First report of safety and efficacy of daratumumab in 2 cases of advanced immunoglobulin light chain amyloidosis. *Blood*, 2016. 128(15): p. 1987-1989.
31. Kaufman, G.P., et al., Daratumumab yields rapid and deep hematologic responses in patients with heavily pretreated AL amyloidosis. *Blood*, 2017. 130(7): p. 900-902.
32. Saba, N., et al., High treatment-related mortality in cardiac amyloid patients undergoing autologous stem cell transplant. *Bone marrow transplantation*, 1999. 24(8): p. 853.
33. Comenzo, R.L. and M.A. Gertz, Autologous stem cell transplantation for primary systemic amyloidosis. *Blood*, 2002. 99(12): p. 4276-4282.
34. Comenzo, R.L., et al., Dose-intensive melphalan with blood stem-cell support for the treatment of AL (amyloid light-chain) amyloidosis: survival and responses in 25 patients. *Blood*, 1998. 91(10): p. 3662-3670.
35. Gertz, M., et al., Blood stem cell transplantation as therapy for primary systemic amyloidosis (AL). *Bone marrow transplantation*, 2000. 26(9): p. 963.
36. Dispenzieri, A., et al., Eligibility for hematopoietic stem-cell transplantation for primary systemic amyloidosis is a favorable prognostic factor for survival. *Journal of Clinical Oncology*, 2001. 19(14): p. 3350-3356.
37. Moreau, P., et al., Prognostic factors for survival and response after high-dose therapy and autologous stem cell transplantation in systemic AL amyloidosis: a report on 21 patients. *British journal of haematology*, 1998. 101(4): p. 766-769.
38. Seldin, D.C., et al., Improvement in quality of life of patients with AL amyloidosis treated with high-dose melphalan and autologous stem cell transplantation. *Blood*, 2004. 104(6): p. 1888-1893.
39. Goodman, H.J., et al., Outcome of autologous stem cell transplantation for AL amyloidosis in the UK. *British journal of haematology*, 2006. 134(4): p. 417-425.
40. Cohen, A.D., et al., Risk-adapted autologous stem cell transplantation with adjuvant dexamethasone±thalidomide for systemic light-chain amyloidosis: results of a phase II trial. *British journal of haematology*, 2007. 139(2): p. 224-233.

40. Cohen, A.D., et al., Risk-adapted autologous stem cell transplantation with adjuvant dexamethasone±thalidomide for systemic light-chain amyloidosis: results of a phase II trial. *British journal of haematology*, 2007. 139(2): p. 224-233.
41. Gertz, M.A., et al., Autologous stem cell transplant for immunoglobulin light chain amyloidosis: a status report. *Leukemia & lymphoma*, 2010. 51(12): p. 2181-2187.
42. Gillmore, J.D., et al., Allogeneic bone marrow transplantation for systemic AL amyloidosis. *British journal of haematology*, 1998. 100(1): p. 226-228.
43. Schönland, S.O., et al., Allogeneic and syngeneic hematopoietic cell transplantation in patients with amyloid light-chain amyloidosis: a report from the European Group for Blood and Marrow Transplantation. *Blood*, 2006. 107(6): p. 2578-2584.
44. Grogan, M., et al., Long term outcomes of cardiac transplant for immunoglobulin light chain amyloidosis: the Mayo Clinic experience. *World journal of transplantation*, 2016. 6(2): p. 380.
45. Ward, J.E., et al., Doxycycline reduces fibril formation in a transgenic mouse model of AL amyloidosis. *Blood*, 2011. 118(25): p. 6610-6617.
46. Wechalekar, A. and C. Whelan, Encouraging impact of doxycycline on early mortality in cardiac light chain (AL) amyloidosis. *Blood cancer journal*, 2017. 7(3): p. e546.
47. Kumar, S.K., et al., Doxycycline Used As Post Transplant Antibacterial Prophylaxis Improves Survival in Patients with Light Chain Amyloidosis Undergoing Autologous Stem Cell Transplantation. 2012, *Am Soc Hematology*.
48. Kourelis, T.V., et al., Coexistent multiple myeloma or increased bone marrow plasma cells define equally high-risk populations in patients with immunoglobulin light chain amyloidosis. *Journal of Clinical Oncology*, 2013. 31(34): p. 4319.
49. Dinner, S., et al., The prognostic value of diagnosing concurrent multiple myeloma in immunoglobulin light chain amyloidosis. *British journal of haematology*, 2013. 161(3): p. 367-372.
50. Gertz, M.A., et al., Definition of organ involvement and treatment response in immunoglobulin light chain amyloidosis (AL): a consensus opinion from the 10th International Symposium on Amyloid and Amyloidosis. *American journal of hematology*, 2005. 79(4): p. 319-328.
51. Sancharawala, V., et al., Long-term outcome of patients with AL amyloidosis treated with high-dose melphalan and stem-cell transplantation. *Blood*, 2007. 110(10): p. 3561-3563.