

# Bölüm 11

## MYELOMDA GÖRÜNTÜLEME

Neşe TORUN<sup>1</sup>

### GİRİŞ

Myelom plazma hücrelerinin klonal proliferasyonu ile karakterize hematolojik bir malignitedir. Hem biyolojik hem de klinik heterojeniteye sahip geniş bir hastalık spektrumu vardır. Myelom tanısı konulmadan önce hastaların tamamının asemptomatik benign bir evre olan önemi belirsiz monoklonal gamopati olduğu kabul edilmektedir. Klinik olarak heterojen bir hastalık olan multipl myelom (MM), genellikle tedavi gerektirmeyen asemptomatik multipl myelom (aMM)] ve tedavi gerektiren semptomatik multipl myelom (sMM) olarak sınıflandırılabilir. 2018 de ABD’ de hematolojik maligniteler içinde 2.sıklıkta görülmüş yaklaşık 12000 ölüme neden olmuştur.<sup>(1)</sup>

Myelomda hastalar tamamen asemptomatik olabilir. Tanı kan testleri ile konulabilir veya çok sayıda semptom ile ortaya çıkabilir. Semptomatik hastalarda hematolojik bulgular, kemik ile ilgili sorunlar, enfeksiyonlar, organ disfonksiyonları, nörolojik şikayetler, kanama bozuklukları saptanabilir. Myelomda tipik olarak multipl litik lezyon ve/veya yaygın kemik iliği tutulumu, ekstremiteler tutulumu izlenebilir. Aktif myelom tanısı uluslararası myelom çalışma grubu (IMWG) tarafından kemik iliğinde plazma hücrelerinin histopatolojik tanısına dayanmaktadır.<sup>(2,3)</sup>

Myelomda görüntülemenin rolü son yıllarda gittikçe artmıştır. Görüntüleme yöntemleri tanıda ve takipde oldukça önemlidir. Osteolitik lezyon ve osteoporoz olarak tanımlanan kemik tutulumu myelomda mortalite morbiditenin major sebebidir. Ayrıca litik lezyonlar prognostik öneme sahiptir. Litik ya da fokal kemik lezyonlarının tespiti tedaviye başlama kriterlerinin bir parçasıdır. Ek olarak, oste-

<sup>1</sup> Öğr. Gör. Dr. Başkent Üniversitesi Adana Dr. Turgut Noyan Uygulama ve Araştırma Merkezi, ntorun@hotmail.com

## KAYNAKÇA

1. Lakshman A, Painuly U, Rajkumar SV, et al. Natural history of multiple myeloma with de novo del(17p). *Blood Cancer J*. 2019 Mar 7;9(3):32.
2. Barwick T, Bretszajn L, Wallitt K, et al. Imaging in myeloma with focus on advanced imaging techniques. *Br J Radiol*. 2019 Mar;92(1095):20180768. doi: 10.1259/bjr.20180768.
3. Wahl RL. (2009). lymphoma and myeloma. Richard L. Wahl(Ed), Principles and Practice of PET and PET-CT. 260-274. Philadelphia: Lippincott Williams&Wilkins
4. Chantry A, Kazmi M, Barrington S, et al. British Society for Haematology Guidelines. Guidelines for the use of imaging in the management of patients with myeloma. *Br J Haematol*. 2017 Aug;178(3):380-393. doi: 10.1111/bjh.14827.
5. Regelink JC, Minnema MC, Terpos E, et al. Comparison of modern and conventional imaging techniques in establishing multiple myeloma-related bone disease: a systematic review. *Br J Haematol*. 2013Jul;162(1):50-61. doi: 10.1111/bjh.12346.
6. Pianko MJ, Terpos E, Roodman GD, et al. Whole-body low-dose computed tomography and advanced imaging techniques for multiple myeloma bone disease. *Clin Cancer Res*. 2014Dec 1;20(23):5888-97. doi: 10.1158/1078-0432.
7. Hillengass J, Mouloupoulos LA, Delorme S, et al. Whole-body computed tomography versus conventional skeletal survey in patients with multiple myeloma: a study of the International Myeloma Working Group. *Blood Cancer J*. 2017Aug 25;7(8):e599. doi: 10.1038/bcj.2017.78.
8. Hur J, Yoon CS, Ryu YH, et al. Efficacy of multidetector row computed tomography of the spine in patients with multiple myeloma: comparison with magnetic resonance imaging and fluorodeoxyglucose-positron emission tomography. *J Comput Assist Tomogr*. 2007May-Jun;31(3):342-7.
9. Kröpil P, Fenk R, Fritz LB, et al. Comparison of whole-body 64-slice multidetector computed tomography and conventional radiography in staging of multiple myeloma. *Eur Radiol*. 2008Jan;18(1):51-8.
10. Dimopoulos MA, Hillengass J, Usmani S, et al. Role of magnetic resonance imaging in the management of patients with multiple myeloma: a consensus statement. *J Clin Oncol*. 2015Feb 20;33(6):657-64. doi: 10.1200/JCO.2014.57.9961.
11. Kloth JK, Hillengass J, Listl K, et al. Appearance of monoclonal plasma cell diseases in whole-body magnetic resonance imaging and correlation with parameters of disease activity. *Int J Cancer*. 2014Nov15;135(10):2380-6. doi: 10.1002/ijc.28877.
12. Baur-Melnyk A, Buhmann S, Becker C, et al. Whole-body MRI versus whole-body MDCT for staging of multiple myeloma. *AJR Am J Roentgenol*. 2008Apr;190(4):1097-104. doi: 10.2214/AJR.07.2635
13. Hillengass J, Fechtner K, Weber MA, et al. Prognostic significance of focal lesions in whole-body magnetic resonance imaging in patients with asymptomatic multiple myeloma. *J Clin Oncol*. 2010Mar20;28(9):1606-10. doi: 10.1200/JCO.2009.25.5356.
14. Gemmel F, Rijk PC, Collins JM, et al. Expanding role of 18F-fluoro-D-deoxyglucose PET and PET/CT in spinal infections. *Eur Spine J*. 2010Apr;19(4):540-51 doi: 10.1007/s00586-009-1251-y.
15. Zamagni E, Patriarca F, Nanni C, et al. Prognostic relevance of 18-F FDG PET/CT in newly diagnosed multiple myeloma patients treated with up-front autologous transplantation. *Blood*. 2011Dec1;118(23):5989-95 doi: 10.1182/blood-2011-06-361386.
16. Pham A, Mahindra A. Solitary Plasmacytoma: a Review of Diagnosis and Management. *Curr Hematol Malign Rep*. 2019Apr;14(2):63-69. doi: 10.1007/s11899-019-00499-8.
17. Cavo M, Terpos E, Nanni C, et al. Role of (18)F-FDG PET/CT in the diagnosis and management of multiple myeloma and other plasma cell disorders: a consensus statement by the International Myeloma Working Group. *Lancet Oncol*. 2017Apr;18(4):e206-e217. doi: 10.1016/S1470-2045(17)30189-4.
18. Hillner BE, Siegel BA, Shields AF, et al. Relationship between cancer type and impact of PET and PET/CT on intended management: findings of the national oncologic PET registry. *J Nucl Med*. 2008Dec;49(12):1928-35 doi: 10.2967/jnumed.108.056713.

19. Bailly C, Leforestier R, Jamet B, et al. PET Imaging for Initial Staging and Therapy Assessment in Multiple Myeloma Patients. *Int J Mol Sci*. 2017Feb18;18(2). doi: 10.2967/jnumed.108.056713.
20. Bredella MA, Steinbach L, Caputo G, et al. Value of FDG PET in the assessment of patients with multiple myeloma. *AJR Am J Roentgenol*. 2005 Apr;184(4):1199-204.
21. Zamagni E, Nanni C, Patriarca F, et al. A prospective comparison of 18F-fluorodeoxyglucose positron emission tomography-computed tomography, magnetic resonance imaging and whole-body planar radiographs in the assessment of bone disease in newly diagnosed multiple myeloma. *Haematologica*. 2007Jan;92(1):50-5.
22. Van Lammeren-Venema D, Regelink JC, et al. <sup>18</sup>F-fluoro-deoxyglucose positron emission tomography in assessment of myeloma-related bone disease: a systematic review. *Cancer*. 2012Apr15;118(8):1971-81. doi: 10.1002/cncr.26467.
23. Caers J, Withofs N, Hillengass J, et al. The role of positron emission tomography-computed tomography and magnetic resonance imaging in diagnosis and follow up of multiple myeloma. *Haematologica*. 2014Apr;99(4):629-37. doi: 10.3324/haematol.2013.091918.
24. Weng WW, Dong MJ, Zhang J, et al. scintigraphy, FDG-PET and PET/CT for diagnosis of multiple myeloma related bone disease--which is best? *Asian Pac J Cancer Prev*. 2014;15(22):9879-84.
25. Jamet B, Bailly C, Carlier T, et al. Interest of Pet Imaging in Multiple Myeloma. *Front Med (Lausanne)*. 2019Apr9;6:69 doi: 10.3389/fmed.2019.00069.
26. Usmani SZ, Mitchell A, Waheed S, et al. Prognostic implications of serial 18-fluoro-deoxyglucose emission tomography in multiple myeloma treated with total therapy 3. *Blood*. 2013Mar 7;121(10):1819-23. doi: 10.1182/blood-2012-08-451690.
27. Rasche L, Angtuaco E, McDonald JE, et al. Low expression of hexokinase-2 is associated with false-negative FDG-positron emission tomography in multiple myeloma. *Blood*. 2017Jul 6;130(1):30-34. doi: 10.1182/blood-2017-03-774422.
28. Lapa C, Garcia-Velloso MJ, Lückerrath K, et al. (11)C-Methionine-PET in Multiple Myeloma: A Combined Study from Two Different Institutions. *Theranostics*. 2017Jul 23;7(11):2956-2964. doi: 10.7150/thno.20491.
29. Lin C, Ho CL, Ng SH, et al. (11)C-acetate as a new biomarker for PET/CT in patients with multiple myeloma: initial staging and postinduction response assessment. *Eur J Nucl Med Mol Imaging*. 2014Jan;41(1):41-9. doi: 10.1007/s00259-013-2520-x.
30. Siontis B, Kumar S, Dispenzieri A, et al. Positron emission tomography-computed tomography in the diagnostic evaluation of smoldering multiple myeloma: identification of patients needing therapy. *Blood Cancer J*. 2015Oct 23;5:e364. doi: 10.1038/bcj.2015.87.
31. Salaun PY, Gastinne T, Frampas E, et al. FDG-positron-emission tomography for staging and therapeutic assessment in patients with plasmacytoma. *Haematologica*. 2008Aug;93(8):1269-71 doi: 10.1038/bcj.2015.87.