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First Turkey Experience of ¹¹C-Methionine PET in Multiple Myeloma Multipl Myelomada 11C-Metiyonin PET'in İlk Türkiye Deneyimi

Özkan E. et al: ¹¹C-Methionine PET in Multiple Myeloma

Elgin Ozkan¹, Güldane Cengiz Seval², Mine Araz¹, Nuriye Ozlem Kucuk¹, Meral Beksaç²

¹Ankara University Medical School, Departments of Nuclear Medicine, Ankara, Turkey

²Ankara University Medical School, Departments of Hematology, Ankara, Turkey

Mine Araz M.D., Ankara University Medical School, Departments of Nuclear Medicine, Ankara, Turkey

+905336667313

minesoyle@yahoo.com

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A 45-year-old female patient with newly diagnosed IgG κ -type myeloma at stage III of the disease as per the international stage system (ISS) was referred for PET imaging to evaluate the extent of disease. In this patient, IgG level was 17.8 g/L (reference range, 7.51-15.6 g/L) and kappa free light chain was 3660 mg/L (reference range, 3.3-19.4 mg/L). Bone marrow biopsy showed 80% of plasma cells and plasma cells were strongly positive for CD38 and CD138. ¹¹C-Methionine (MET) and ¹⁸F-Fluorodeoxyglucose (FDG) PET/CT images showed discordant findings in whole body (Figure 1). Whereas PET/CT with FDG did not depict hypermetabolic intra- or extramedullary foci for active MM (range of SUVmax: 1.5-2.9), MET demonstrated focally increased tracer uptake of the axial (Figure 2) as well as appendicular skeleton (range of SUVmax: 14.3-15.4).

¹⁸F-FDG PET/CT is widely used in prognosis estimation and therapy response evaluation in MM [1]. However, in some cases, plasma cells may not be ¹⁸F-FDG avid [2, 3] or may not overexpress GLUT-1 receptor. Thus, glucose metabolism may not accurately reflect disease heterogeneity, lowering the sensitivity of ¹⁸F-FDG PET/CT. ¹¹C-MET PET has emerged recently as a metabolic indicator in ¹⁸F-FDG negative cases. ¹¹C-MET uptake is related to increased plasma cell proliferation and protein synthesis. Both bone marrow and extramedullary involvement can be successfully demonstrated by ¹¹C-MET [4, 5].

Availability of ¹¹C-MET is limited worldwide due to very short half-life of carbon-11 (¹¹C) and necessity of a PET center with an onsite cyclotron. This first experience case in Turkey well demonstrates the discrepant results between ¹⁸F-FDG and ¹¹C-MET. It is now available in our center to follow up non-¹⁸F-FDG avid MM cases with ¹¹C-MET.

Informed Consent: Informed consent was obtained from the individual participant included study.

Conflict of Interest: The authors declare no conflict of interest.

Keywords: ^{11}C -methionine, ^{18}F -FDG, PET/CT, multiple myeloma

Anahtar kelimeler: ^{11}C -metiyonin, ^{18}F -FDG, PET/BT, multipl miyelom

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Figure 1: MIP images of ^{11}C -MET and ^{18}F -FDG demonstrates discrepant findings in whole body.

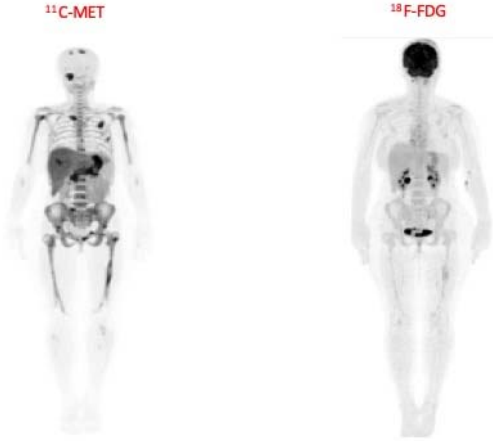


Figure 2: FDG depicts faint uptake in the skeleton (range of SUVmax: 1.5-2.9) in contrast to highly intense lesions in ^{11}C -MET (transaxial slice of calvarium, left 4th and right 6th ribs, arrows) (range of SUVmax: 14.3-15.4).

