Abstract: P918

Title: ROLE OF THE COMBINATION OF FDG PET PLUS WHOLE BODY MRI FOR STAGING PATIENTS IN HIGH RISK SMOLDERING MYELOMA: A PROSPECTIVE TRIAL

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Background:

According to IMWG criteria, Smoldering Multiple Myeloma (SMM) is an asymptomatic stage characterized by M-spike < 3 g/dl serum and/or bone marrow plasma cells infiltration between 10-59% in absence of myeloma-defining events and organ damage.

In SMM, it is really important to differentiate high risk SMM (HR-SMM), in which treatment could be available thanks to clinical trials.

2016 IMWG criteria state that detection of bone lesions (myeloma defining event) is mandatory for diagnosis of multiple myeloma (MM) as well as ruling out them is essential for diagnosis of SMM. 18F-fluorodeoxyglucose (FDG) PET with CT (FDG PET/TC) or whole body CT are indicated to assess lytic lesions. Magnetic resonance imaging (MRI), especially if the previous two are negative, is a diagnostic tool for identifying extra- or para-skeletal manifestations and complications, namely pathological fractures and spinal cord compression, as well as diagnostic tool for MM when > 1 lytic lesion is detected. Whole-Body MRI (WB-MRI) is a cross-sectional imaging technique for the entire skeletal study, with high sensitivity in detecting bone lesions, not still widely available because of costs and technical reasons. Moreover, since MRI has a higher sensitivity for detecting higher bone marrow cellularity, which is a clue of plasmacellular infiltration without overt bone lytic lesions, WB-MRI can detect a diffuse pattern of marrow involvement. Nevertheless, the IMWG has not yet defined the MRI diffuse pattern as a criterion for symptomatic disease, then the routine detection of this pattern could be relevant in patients with SMM to possibly suggest a group of patients with higher risk of developing lytic lesions and so progression in MM.

Aims:

It is really important to clarify in SMM the best analysis in order to perform a correct diagnosis, and particularly to define if the combination of FDG-PET/TC and WB-MRI could improve the differential diagnosis between high risk SMM and symptomatic MM.

Methods:

In our Institution, from January 2021 to January 2023, we performed a prospective trial enrolling 26 consecutive newly diagnosed HR-SMM, according to IMWG, in which WB-MRI was performed according to MY-RADS criteria in combination with FDG PET-CT (median age 56; range 36-85).

Results:

Interim analysis of the comparison between WB-MRI and FDG PET-CT, showed a discordance in 4/26 (15%). In particular, in 3/26 (12%) WB-MRI showed bone lesions that have lead to symptomatic MM diagnosis according to IMWG, while PET-CT was negative. In one case, PET-CT showed a diffuse uptake, not diagnostic for MM, while WB-MRI was negative. WB-MRI showed a 100% of accuracy in detecting SMM and MM.

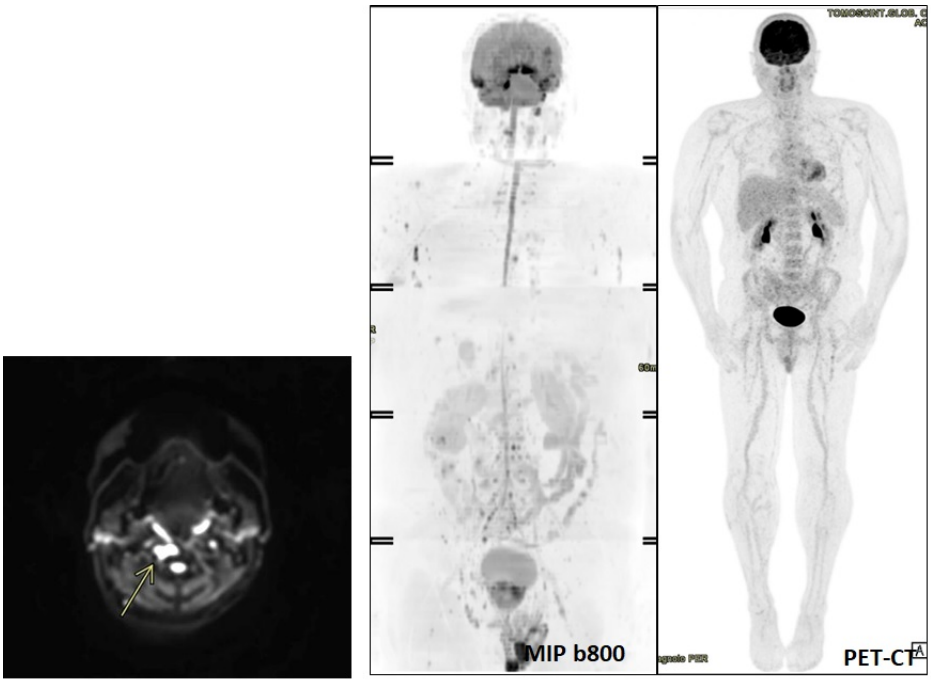
Therefore, WB-MRI has lead to a modification of the prognosis and treatment (observation in SMM vs treatment in MM) in 3/26 patients (11%) (i.e. Fig. 1 - DWI of C2 lesion).

Furthermore, in 5/23 (22%) SMM WB-MRI showed a slight diffuse alteration pattern of bone marrow without any overt lytic bone lesion, which could be a potential prognostic evidence.

Summary/Conclusion:

Our preliminary results support a fundamental role of WB-MRI plus FDG PET/CT in newly diagnosed high risk SMM, which could modify prognosis and treatment.

In particular, WB-MRI plus FDG PET/CT could be more accurate in the detection of bone lesions (myeloma defining events) than FDG PET/CT alone, being able to anticipate MM diagnosis and its treatment. Moreover, a diffuse pattern of marrow involvement could be detected in some HR-SMM patients without any overt lytic lesions: it is questionable if this group is associated with a rapid progression in lytic lesions and so in symptomatic MM. Prospective data on evolution of these patients are pending.



Keywords: Myeloma, MRI, FDG-PET, Multiple myeloma