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Letter to editor

# Use of Marrow Scintigraphy to Confirm Compensatory Marrow Rather than Active Myeloma

Dear Editor,

We read with much interest the article entitled "Use of marrow scintigraphy to confirm compensatory marrow rather than active myeloma" by Bartel *et al*. published in your esteemed journal. This article enlightens us regarding a very interesting case of false positive fluorodeoxyglucose (FDG) uptake in a follow-up case of multiple myeloma (MM). The authors in the present case have very nicely described the role of sulfur colloid bone marrow scintigraphy to differentiate reactive bone marrow from active disease. In MM, $^{18}$F FDG-positron emission tomography/computed tomography (PET/CT) can scan the whole body in reasonable time frame and in a single scan which can detect focal and diffuse bone marrow involvement with high sensitivity and specificity. However, as $^{18}$F-FDG is a nonspecific radiotracer which is taken up by any metabolically active tissue, it is not specific for disease detection. False-positive PET/CT scans may also occur in settings of negative bone marrow and negative M-component markers and these conditions include inflammatory conditions, chemotherapy (within 1 month), or radiation therapy (within 2–3 months).[1] $^{99}$Technitium sestamibi (methoxy-isobutyl-isonitrile [MIBI]) imaging using Tc-99m-2-MIBI, is an alternative nuclear imaging modality to identify areas of active disease in MM, not only morphological disease activity but also functional disease activity which may be of use in assessing response to treatment. It is better than PET/CT in identifying diffuse disease involving spine and pelvis.[2] Somatostatin receptor scintigraphy using $^{111}$In-pentetreotide can also be a good alternative to find the malignant plasma cells in MM and plasmacytoma patients, especially at relapse.[3] MM is a process characterized by neoplastic proliferation of plasma cells, and these cells nearly always produce complete monoclonal immunoglobulins or monoclonal immunoglobulin light chains. On the basis of increased methionine uptake in plasma cells, active MM can also be imaged with $^{11}$C-methionine PET.[4] $^{99}$mTc-sestamibi has also been proposed as a potential tracer in patients with MM. The presence of focal uptake or of intense diffuse bone marrow uptake suggests that the patient has active and advanced stage disease while a negative scan in a patient with MM clearly indicates remission.

As the difficulty lies between differentiating active disease and reactive marrow, the authors Bartel *et al* in the current article have hypothesized that sulfur colloid scan should be taken into consideration which can differentiate between reactive marrow versus pathological marrow involvement in myeloma. However to the best of our knowledge, Berk *et al*. has described an interesting case of MM with intense hepatic and splenic uptake on Tc-99m HDP bone scan and have discussed its clinical implications and possible uptake mechanisms. Tc-99m MIBI and Tc-99m sulfur colloid were used to demonstrate bone marrow involvement and focal lesions of MM. They have correlated and concluded that bone marrow involvement of MM could be studied by Tc-99m MIBI or Tc-99m sulfur colloid imaging, and solid organ uptake of bone-seeking agents can be observed even in the absence of a significantly increased level of serum calcium.[5] From their observation, it seems that sulfur colloidal uptake in a follow-up case of MM may also be possible in disease involvement. Like FDG PET/CT which cannot differentiate in such scenario, marrow uptake in sulfur colloid scintigraphy may also lead to similar kind of confusion in interpretation. The pattern of sulfur colloid uptake can also not solve this situation due to the nonspecificity of sulfur colloid as described by the authors in the present case and Berk *et al*. in another case. Such scenario in clinical practice is really a big challenge to the diagnostic nuclear physician which demands studies involving larger number of patients using different radiotracers available till now for MM and also at the same time it warrants the need of plasma cell-specific radiotracers.

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## Conflicts of interest
There are no conflicts of interest.

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