Abstract

Bone metastases are a recognized prognostic factor in patients with prostate cancer. Currently, Tc99 bone scan is the most frequently used imaging technique for their detection, showing a high sensitivity but a limited specificity. Thus, new morphological and mainly functional imaging techniques based on PET and MRI, or hybrid techniques such as PET-CT or PET-MRI have been introduced to improve metastases detection, estimation of total tumor load and for therapeutic monitoring. In this clinical scenario, total body MRI has arisen as a very promising technique in detection and therapeutic monitoring of bone metastases of prostate cancer, because it neither uses ionizing radiation nor needs the administration of contrast media. The incorporation of MR diffusion to the morphologic total body MRI protocols provides functional information, improving the sensitivity in oncological lesions detection in general and osteolytic bone metastases of PCa in particular. Its integration in protocols with morphological sequences and its quantification through ADC maps enables us to better understand metastatic bone disease patterns and their changes with different therapies. Total body D MRI enables the early classification of the response to treatment with evident advantages over other imaging techniques and the purely morphological approach with MRI. In any case, prospective and cost-effectiveness studies are necessary to establish the role of total-body D MRI in the management of patients with PCa.

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