CORRESPONDENCE

The Diagnostic Imaging of Bone Metastases

by Prof. Dr. med. Walter Heindel, Raphael Gübitz, Dr. med. Volker Vieth,
Prof. Dr. med. Matthias Weckesser, Prof. em. Dr. med. Dr. rer. nat. Otmar Schober,
Prof. Dr. med. Michael Schäfers in issue 44/2014

More Reliance on PET-CT Findings

It is commendable that the authors have highlighted the combination of positron-emission tomography and computed tomography (PET-CT) in their article (1) and I do not see any conflict of interest with the sponsor. However, I think that the benefits derived from an additional work-up with computed tomography (CT) and magnetic resonance imaging (MRI) to follow-up PET findings are usually overrated. PET-CT by itself should already have considerable weight.

Radiography (2) plays a very important role when it comes to interpreting PET findings in patients with bone metastases—whether the radiograph provides an overview of the anatomical area or targets a special detail under fluoroscopy guidance. Any error may be fatal—this also applies to patients with metastases. Above all, conventional X-ray tomography (in the hands of an experienced radiologist) should be part of the work-up of unclear local findings, as it can provide exceptional insights. CT scans completely fail to visualize early rib metastases, and also with regard to the specificity of the findings—the same is true for MRI.

To monitor treatment response—according to EORTC and PERCIST criteria (version 1.1) (3), i.e. based on the standardized uptake value (SUV)—PET-CT has also to be performed using the proper tracer, i.e. as an ^{18}F -fluoride PET, and, if necessary, without additional administration of an X-ray contrast agent. Small lesions may otherwise be masked. False-positive and false-negative CT and MRI findings may have serious consequences. In addition, MRI not only fails to detect focal osteolytic lesions. The CT scan is mainly required to establish the location of the PET findings. All of the above statements exclusively refer to the work-up of bone metastases. Radiation therapists (and their patients) would benefit from relying far less on CT and MRI findings.

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Skeletal Scintigraphy Underrated

In our opinion, the proven method of skeletal scintigraphy, which has been optimized over the years, has not been appreciated as much as it deserves in the review (1).

The article rightfully notes the following: “The sensitivity and specificity of scintigraphy are both markedly increased with the use of contemporary types of SPECT and SPECT-CT apparatus [...]”, “raised the negative predictive value [...] to 98%“ and “[...] the sensitivity and specificity [...] rises above 90%”; however, these percentages are neither stated in the abstract (“specificity 81%, sensitivity 86%”) nor in *Table 3*. If the “current state of the art” is used with regard to computed tomography (CT) and magnetic resonance imaging (MRI), it should be applied to scintigraphy as well (or stated in the abstract and table that there is a lack of data as such) instead of limiting the analysis of nuclear medicine procedures to planar images that “do no longer represent the current state of the art.”

From a pathophysiological perspective, it is difficult to conceive that the MRI-detected tissue water should precede the scintigraphy-detected increased mineralization in the bone affected by metastatic disease; in this matter, a fair comparison has yet to be performed. In addition, we would like to criticize that PET-MRI, which is very much highlighted in the review, has definitely not yet established its role in the current healthcare system; especially since information on the costs of PET-MRI is missing altogether in the review. The paper is flawed by its purely academic perspective, exemplified by the definitely unsupportable statement that in patients with “malignant melanoma PET-CT with FDG has replaced other techniques for the detection of bone metastases”—as we know, PET is not available to patients covered by statutory health insurance.

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Conflict of interest statement

The authors of both letters declare that no conflict of interest exists.

The authors of the review have chosen not to reply.