Letter to the Editor


We thank Derlin et al for their interest in our meta-analysis [1]. Although most of the issues mentioned in their letter have already been dealt with in our meta-analysis, we acknowledge that they are important and warrant further discussion.

First, the main endpoint of our meta-analysis was based on a per-patient analysis rather than a per-lesion analysis. Indeed, as Derlin et al commented, per-patient analysis will result in significantly better diagnostic performance than per-lesion analysis, as shown in the study by Mosavi et al [2], in which the former yielded sensitivity of 1.0 compared with 0.56 from the latter. Therefore, it is clinically important to know both the per-patient and the lesion-based performance. However, per-lesion analysis was not feasible, as most studies performing a per-lesion analysis regarding magnetic resonance imaging (MRI) for bone metastases in prostate cancer were not diagnostic test accuracy studies and therefore did not provide sufficient information for the generation of 2 x 2 contingency tables to calculate sensitivity and specificity [3,4]. In addition, various MRI sequences were used by the investigators in each study included. Three of the studies used only a single sequence, while others used a multiparametric protocol. To account for this heterogeneity, we performed a meta-regression analysis for studies using diffusion-weighted imaging and those using only conventional MRI sequences (i.e., T1-weighted imaging, short tau inversion recovery) and found that this was not a potential source of heterogeneity in our meta-analysis. However, we do advise that when interpreting a bony lesion in the clinical setting of prostate cancer, a multiparametric approach using all possible sequences should be applied. Despite the fact that we could not derive per-lesion diagnostic performance, we believe that the per-patient performance presented in our meta-analysis provides clinically meaningful value in making management and therapeutic decisions.

Second, all ten studies included used the “best value comparator” (combination of imaging/clinical/biological data and follow-up) as the reference standard. Although the gold standard of histopathological proof would be the most robust method for identifying whether a bony lesion is metastasis or not, this was not feasible, as biopsy or surgery to determine pathology is not routinely performed, and would not be ethically justifiable, for suspicious bony lesions in prostate cancer patients. An alternative, as stated by Derlin et al, would be to use the highly specific prostate-specific membrane antigen (PSMA)-based positron emission tomography. In fact, there are recent efforts to analyze PSMA and MRI collaboratively [5].

Finally, there may be some limitations to direct application of our results to routine practice owing to possible biases. As mentioned by Derlin et al, all but two studies were performed at single centers, four were retrospective, and several had small study populations, possibly giving rise to various types of bias. However, despite such issues, these studies are currently the only studies providing diagnostic test accuracy results for MRI in detecting bone metastasis from prostate cancer. In order to determine the diagnostic performance of MRI free from such biases, future large-scale studies with a prospective, multi-center design will be required.

Conflicts of interest: The authors have nothing to disclose.

References


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