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Misdiagnosis of vertebral fractures on plain films: Are radiologists really working so bad?

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Sirs,

We read with great interest the paper by Diacinti and colleagues entitled "Misdiagnosis of vertebral fractures on local radiographic readings of the multicenter POINT (Prevalence of Osteoporosis in INTernal medicine) study" recently published in *Bone* [1]. We strongly agree on the fact that prompt identification of vertebral fractures (VFs) is of paramount importance for the appropriate management of osteoporotic patients, as well as for the well-known clinical implications with regards to quality life, morbidity, and mortality [2]. The problem of underreported VFs is not new, with recent literature being plenty of retrospective studies showing that radiologists are frequently missing VFs in their imaging studies [3]. Concurrently, this led to the development of the concept of "opportunistic identification" of VFs, namely the detection of VFs with imaging studies obtained for other clinical indications [3]. The radiological community became well aware of this problem, as showed by several initiatives with the aim to improve the radiological recognition of VFs, such as the "Vertebral Fracture Initiative" proposed by the International Osteoporosis Foundation together with the European Society of Musculoskeletal Radiology [4–6]

In their paper, Diacinti et al. analyzed the rate of misdiagnosis in VFs identification/grading by "local" radiologists compared to two experienced "central" radiologists, who were considered the reference standard. In view of excellent agreement between local and central readers for moderate and severe VFs, authors reported a non-negligible percentage (30.8%) of mild VFs that were misdiagnosed by local radiologists, leading to average values of sensitivity and specificity (76.1% and 75.8%, respectively). However, we believe that study methodology may have influenced these results. First, expert radiologists performed a double evaluation of radiographs using both Genant semi-quantitative method (GSM) and the algorithm-based qualitative approach (ABQ), the latter with the specific purpose of "better evaluating mild vertebral deformities".

Second, although it is specified that central radiologists were "skeletal experts", no information about the level of expertise of local radiologists is provided. We think these discrepancies may have potentially introduced a bias. Although most moderate and all severe VFs are easily recognized, no clear agreement exists about the criteria to use for diagnosing lower grade VFs [4]. Even though GSM remains the most widely used classification, recent reviews stated no evidence to support the use of a specific diagnostic method compared to others [4]. Notably, some limitations are also reported for ABQ method, which was used by Diacinti et al. to improve their analysis [4]. Finally, some authors argued the hypothesis that mild reductions in vertebral height are of uncertain implication, especially if reported without connecting it to the underlying disease [7].

In conclusion, reporting mild VFs is not an easy task. This is even more emphasized when transposed to daily musculoskeletal reporting, which is associated with high prevalence of burnout [8]. In an ideal world, all radiologists would identify all VFs, regardless their severity. However, the world we live in is not perfect, and we prefer to optimistically see the results by Diacinti et al. as a "half-full glass". We think continuous and robust communication between clinicians and radiologists may represent the best way to fill up this glass.

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