Identification and Onward Management of Vertebral Fragility Fractures- Can We Do Better?

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Editorial

The readership of this journal will be all too aware of the significant morbidity, mortality and cost implications of osteoporosis and its complications. Vertebral fragility fractures (VFFs) are the most common type of osteoporotic fracture with an incidence of 20% in women over 80 years of age [1, 2]. Importantly a VFF is a key predictor for subsequent hip fracture, with over 55% of patients with hip fractures having evidence of a previous VFF [3, 4]. It makes sense therefore that improving the recognition and treatment of VFFs can contribute significantly to reduced morbidity and mortality from osteoporosis.

The initial opportunity for identification of a VFF usually occurs at the time of reporting the relevant spinal imaging, whether X-ray, computed tomography (CT) or magnetic resonance (MR) imaging. The type of reporter has changed over recent years, with imaging reports now issued not only by onsite radiologists, but also radiologists working offsite and remotely often for teleradiology companies – reporting radiographers and in some cases clinicians also may report imaging studies. With recent significant increases in all types of imaging for a range of clinical conditions, in particular body CT, where the spine is included in the field of view although is not the focus of the study, the potential exists for the opportunistic identification of incidental VFFs. To complete the pathway and enable the patient to access appropriate further investigation and therapeutic intervention, once the VFF is identified effective mechanisms need to be in place to communicate the report findings with a structure established to receive and act upon the report. Typically in the UK a Fracture Liaison Service (FLS) will be the network solution to provide effective secondary fracture prevention and therapeutic intervention. FLS networks will be very familiar to readers of this article, they are often located in the acute hospital, but also in the community and primary care [5].

It is also however well recognised that VFFs are frequently underdiagnosed by clinicians and also under-reported by radiologists [6, 7]. VFFs are often asymptomatic, only 30% become apparent
clinically [8]. A number of factors have been identified in the radiological underdiagnosis of VFF following imaging [9]. Radiologists may be unaware of the clinical importance of VFFs and may not routinely review the spinal components of imaging investigations. Uncertainty around the diagnostic criteria for VFF and the use of ambiguous reporting terminology (e.g. “loss of height”, “wedging”) are also contributing reporting factors. Communication of reports may be hampered by under-developed radiology departmental information systems (RIS) and report alert processes and this can be further complicated by lack of clear and defined onward referral pathways.

To further examine the apparent difficulties in VFF diagnosis and onward management the Royal College of Radiologists (RCR) undertook a UK-wide audit in 2019 to evaluate radiology departmental reporting practice and process. The audit included both organisational and patient-related reporting data sections, evaluating the diagnosis of VFF on CT studies including the thoraco-lumbar spine, where the spine was not the focus of the study [10]. The audit was undertaken in collaboration with the Royal College of Physicians (RCP) and the Royal Osteoporosis Society (ROS) and used the ROS (previously the National Osteoporosis Society) guidance document on VFF identification as a template [11]. The audit questionnaires were distributed to the established network of RCR departmental audit leads, with patient reporting data requested in 50 patients per department. The overall response rate was 63% (127/202 eligible departments responded) and patient data was received in 6357 patients. It is beyond the scope of this article to discuss the audit findings in detail and readers are directed towards the journal publication for further information [10], but some key points can be highlighted.

The patient reporting section of the audit demonstrated a lack of compliance with all the audit reporting standards – in particular those standards relating to report comment on bone integrity, fracture severity, use of recommended terminology (namely “vertebral fracture”) and appropriate recommendations for further investigation/onward referral. An “actionable” report is one that answers the clinical question and is worded to prompt appropriate action for the patient [12, 13]. The audit found that reports were considered “actionable” in only 0.8% of cases.
A number of issues were also identified in the organisational/departmental section of the audit, inhibiting effective report communication or action upon report receipt. Only a minority of radiology departments had mechanisms in place to routinely alert VFFs –37% of responders had established access with a FLS, with an onward agreed VFF referral pathway in place in just 19% (and unavailable for the majority of remote, teleradiology reporters).

The published audit makes a number of recommendations [10] but it is clear that the solutions to VFF under-diagnosis are multifactorial and multidisciplinary and will involve reporting radiologists and radiographers, clinicians and administrative teams. Some of the solutions will arise from internal discussion and increased awareness within radiology departments themselves – agreeing and standardising report terminology and VFF grading/assessment are important (the Genant semi-quantitative tool was used in the audit [14]. Investment, particularly in IT infrastructure and communication systems, will be essential for many departments, to be combined with continued expansion and development of the national FLS network. Artificial Intelligence (AI) systems are likely to have an increasingly prominent role in diagnosing VFFs on spinal imaging, AI will not remove the need for those reporting spinal imaging to be able to identify and recommend appropriate management for these lesions.

Improving awareness of the importance of VFFs amongst all imaging reporters and clinical teams is a desired key outcome from the RCR national audit and articles such as this. The 2019 UK-wide audit should act as a driver to improve the diagnosis and management of these important fractures and thereby make a significant impact on the quality and longevity of life for a large cohort of often frail and vulnerable patients.
References


