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Prevalence of vertebral fragility fractures in patients aged 70 years and older attending computed tomography imaging in UK radiology settings

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Background

Osteoporotic vertebral fractures (VFx) are the commonest fragility fracture presenting in 12-20% of women aged 50+ according to data published >10 years ago [1,2], Outcomes of VFx include increased morbidity and mortality [3,4,5] and yet up to 70% of Vfx do not come to medical attention/remain undiagnosed. The presence of a VFx is also a powerful predictor of future fracture[6] presenting a critical opportunity to intervene with secondary fracture prevention measures. Opportunities are missed during imaging studies to report on VFx that are incidental to the primary indication for the imaging test.

In response to the publication in 2017 of the Royal Osteoporosis Society (ROS) ***Clinical guidance for the effective identification of vertebral fractures***, the Royal College of Radiologists collaborated with the Royal College of Physicians and the ROS to develop and deliver a national audit to scrutinise the the reporting protocols, policy and practice UK wide within radiology departments.

Methods

This study was designed to investigate the presence of vertebral fragility fracture in patients aged 70 and over attending UK imaging centers for computed tomography (CT) scans for indications unrelated to Musculo-skeletal conditions. National radiology audit leads undertook retrospective data gathering at their local center by scrutiny of 50 consecutive CT scans that included the thoracolumbar spine in patients age 70 or over. Trauma, known bony metastatic disease and myeloma were excluded. VFx identification criteria used was the Genant semi-quantitative method, and Grade 1 (mild) fractures were not included in order to exclude confounders that may mimic grade 1 fractures. Patients were not divided by gender.

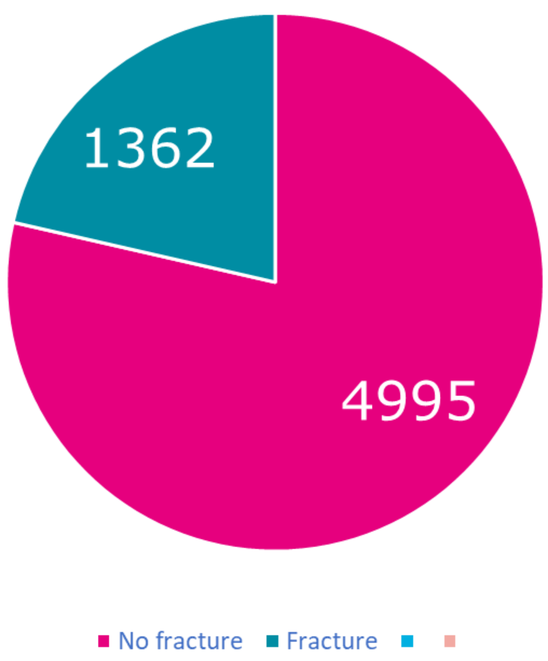
Results

There was a 63% (127/202) response rate with 6357 patients' scans evaluated.

The four home UK nations were included with Wales being somewhat underrepresented when compared to the other nations. (table 1)

Nation	response
N Ireland	77 %
Scotland	66 %
England	64 %
Wales	20 %

1362 scans demonstrated one or more grade 2/3 VFx demonstrating a **prevalence** of **21.4%** in this group of patients (fig 1)



Discussion

Prevalence is largely concordant with data published by studies >10 years ago. There have been no demonstrable decreases in the prevalence of VFx within this cohort which this may reflect the aging population, lack of progress in preventing vertebral fractures in the older adult, or selection bias of the study.

A comparative prevalence study would address these questions and indicate true prevalence of vertebral fractures in the older adult.

Reporting and onward referral for secondary fracture prevention were also investigated and found that 5.5% of the reports identifying VFx recommended further investigation for osteoporosis and only 0.8% of the reports were regarded by auditors as 'actionable' by the referrer. The number of vertebral fractures identified in this study was not reported

Conclusion

Prevalence of vertebral fragility fracture appears to have remained static in the past decade suggesting that prevention of vertebral fragility fracture strategies have yet to be fully defined or effective and incidence has not reduced. CT imaging that includes the spine is a valuable opportunity to intervene where there are previously unreported vertebral fracture which can prevent further fracture, morbidity and mortality. Current systems are not effective in identifying and acting on incidentally found vertebral fracture.

This study also supports the identification of opportunities for quality improvement in the identification of vertebral fragility fractures within radiology departments, nationally through QI programmes supported by the Royal Colleges and by the ROS.

References

1) O'Neill TW, Felsenberg D, Varlow J, Cooper C, Kanis JA, Silman J. The prevalence of vertebral deformity in European men and women: the European Vertebral Osteoporosis Study. J Bone Miner Res. 1996;11:1010-18

2) Cooper C, Atkinson EJ, O'Fallen WM, Melton LJ 3rd. Incidence of clinically diagnosed vertebral fractures: a population based study in Rochester, Minnesota. J Bone Miner Res. 1992;7:221-7.

3)Cauley JA, Risk of mortality following clinical fractures. Osteoporosis Int. 2000;11:556-61

4) Kado DM, Vertebral fractures and mortality in older women: a prospective study. Arch Intern Med. 1999;159(11):1215-20.

5) Jalava T, et al. Association between vertebral fracture and increased mortality in osteoporotic patients. J Bone Miner Res. 2003;18(7):1254-60.

6) Black DM, Arden NK, Palermo L, Pearson J, Cummings SR. Prevalent vertebral deformities predict hip fractures and new vertebral deformities but not wrist fractures. Study of Osteoporotic Fractures Research Group. J Bone Miner Res. 1999;14:821-28.

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