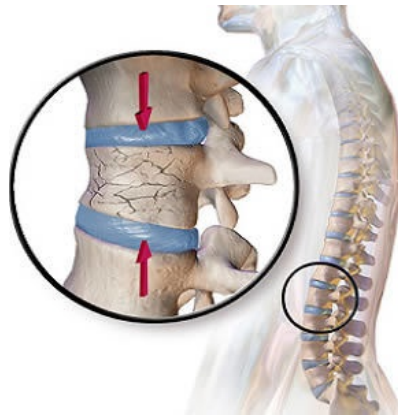




## Radiology of Vertebral Fractures in Women and Men



A new study compares two methods for osteoporotic vertebral fracture (VF) assessment on lateral spine radiographs, using data of 4,465 women and 1,771 men over 50 years old from the Canadian Multicentre Osteoporosis Study (CaMos). Results show that defining VF by a modified algorithm-based qualitative (mABQ) approach is preferred to the use of the Genant semi-quantitative (GSQ) technique for clinical assessments.

Vertebral fractures (VFs) are a common type of osteoporotic fracture and a risk factor for future clinical fracture. Early and accurate diagnosis of VF is important to optimise clinical management of patients with osteoporosis. Since VFs may be asymptomatic or unrecognised, imaging, usually performed by lateral radiographs of the spine, is clearly necessary to diagnose vertebral fractures. Nevertheless there is no consensus regarding the radiologic definition of a VF and, therefore, no “gold standard”.

The GSQ method has been valuable in providing a systematic approach to VF diagnosis, in particular in clinical and epidemiological studies. GSQ is also widely used in clinical practice but clinical implications of this wider use are unknown due to variability in training of, and assessment by, readers, and the risk profile of the underlying population.

The Algorithm-Based Qualitative (ABQ) tool, proposed by Jiang et al., is a structured approach to qualitative diagnosis. The main emphasis of this approach is to identify VFs as lesions of the vertebral end-plate (EP), but there is also recognition of the importance of cortical breaks. A modified ABQ (mABQ) tool could also incorporate identification of cortical breaks and/or buckling and grading of ABQ fractures according to the apparent degree of vertebral height reduction as part of the diagnostic criteria.

The current study compared the GSQ and a mABQ tool for radiologic identification of VF in a large population-based longitudinal cohort of men and women. Researchers evaluated 6,236 participants from CaMos with available lateral thoracic and lumbar spine radiographs (T4-L4) at baseline (1995-1997) for analyses by vertebra.

The results showed that observer agreement was lowest for grade 1 VFs determined by GSQ. Among physician readers, agreement was greater for VFs diagnosed by mABQ than by GSQ. In addition, GSQ VF prevalence and incidence were higher than with the mABQ method. Women had more prevalent and incident VFs relative to men as defined by mABQ but not as defined by GSQ. Prevalent GSQ VFs were predominantly found in the mid-thoracic spine whereas prevalent mABQ and incident VFs by both methods co-localised to the junction of the thoracic and lumbar spine.

"VF determined by the two methods showed differences in prevalence, in sex distribution and in segmental

distribution in the spine, but similarities in incidence and in the effect of advancing age. Prevalent GSQ1 VF and prevalent mABQ1 VF were both associated with reduced BMD [bone mineral density] and with incident VF. Nevertheless, the links were stronger with prevalent mABQ1 VF which were also associated with non-vertebral fractures. Therefore, the mABQ approach to defining VF is preferred to the use of GSQ for clinical assessments," the study concludes.

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