BONE DENSITY & OSTEOPOROSIS:

An Update for Manitoba Physicians

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Re: OSTEOPOROSIS – THE IMPORTANCE OF RECOGNIZING VERTEBRAL FRACTURES

Why are vertebral fractures important?

Although bone density measurement is pivotal in the diagnosis of osteoporosis and fracture risk assessment, conventional X-rays still have an important role to play in identifying patients that can benefit from further assessment and treatment. Individuals who have suffered a spontaneous or minimal trauma vertebral fracture should be considered to have osteoporosis even without BMD in the "osteoporosis" range. The recently published 2002 Clinical Practice Guidelines for the Diagnosis and Management of Osteoporosis in Canada (CMAJ Nov 12, 2002) state that
"the improved recognition and measurement of vertebral deformities represents a major opportunity for the increased early recognition of osteoporosis."

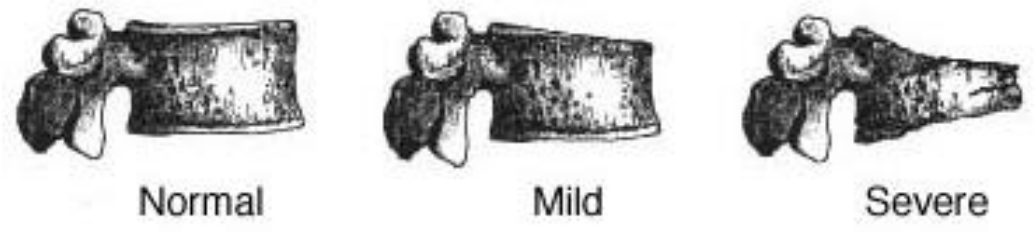
Vertebral fractures occur with a higher incidence earlier in life than other types of osteoporotic fractures, including hip fractures. Both symptomatic and asymptomatic vertebral fractures are associated with increased morbidity and mortality. Most vertebral fractures are occult and asymptomatic yet there is an increased mortality rate associated with them as there is for hip fractures. The presence of a vertebral fracture increases the risk of a second vertebral fracture at least four-fold. Of women who had a recent osteoporotic vertebral fracture, 20% will sustain a new fracture within the next 12 months. Pharmacologic therapy can cut this rate in half. Vertebral fractures are also indicators of increased risk of fragility fractures at other sites such as the hip. **Clinical trials show that it is the individual with a vertebral fracture who has the most to gain from osteoporosis treatment.**

A "missed" opportunity…

Since the majority of vertebral fractures do not come to clinical attention, radiographic diagnosis is considered to be the best way to identify and confirm the presence of osteoporotic vertebral fractures in clinical practice. Unfortunately, experience shows that vertebral fractures seen on chest or spine radiographs are frequently omitted from the radiologist's dictated report. This is particularly likely to occur when the examination is being done for another reason (eg., chest X-ray to evaluate dyspnea) or when the clinical information supplied is incomplete. The requesting physician can assist the radiologist by clearly indicating on the requisition that the examination is being done to look for osteoporotic compression fractures. Directly reviewing the spine radiographs with the radiologist can be a valuable experience for both parties. Not only does the requesting physician gain a better appreciation for the severity of the abnormality and confidence in recognizing them, but it also reminds the radiologist of the importance of not omitting mild compression fractures from the report as "normal aging".

How much vertebral height loss is needed to diagnosis a compression fracture?

One widely used criterion is derived from measurements of the vertical height of a vertebral body at its anterior margin, centre (or mid-position) and posterior margin, as assessed on lateral spine radiographs (Genant HK, et al. J Bone Mineral Res 1996;11:984-986). If any of these measurements differ from each other or from the same measurements in the supra- or sub-adjacent vertebrae by 20% or more the vertebra is considered to have a fracture deformity provided that congenital, developmental, degenerative or other causes of such deformities are excluded. Although it is also possible to grade the severity of fracture (mild 20-25%, moderate 25-40%, severe more than 40%), the most important radiographic distinction is between normal (or non-fracture) and definite vertebral fracture.



In comparing spine X-rays in the same patient, a change in vertebral height 15% or more is evidence of an intercurrent compression fracture and should prompt reassessment of the patient's treatment. More than one new or progressive vertebral fracture is unusual with currently approved medications, and demands a full review of the therapeutic regimen and patient's adherence. It is also prudent to screen for secondary factors such as hyperparathyroidism, osteomalacia or myeloma.

The role of the radiologist…

The Manitoba Bone Density Program Committee and the Manitoba Section of the Canadian Association of Radiologists recently sent a letter to all radiologists in Manitoba requesting that vertebrae with definite endplate fractures and/or approximately 20% of more decrease in height and features indicating fracture should be mentioned in the X-ray report.

Who needs spine X-rays?

Significant back pain, kyphosis, measured height loss > 2 cm. in one year or historical height loss of > 4 cm. should trigger a thoraco-lumbar spine X-ray to determine the presence of vertebral fractures even if there is no accompanying history of back pain. Some experts also advocate spine X-rays prior to starting intensive corticosteroid therapy (eg., temporal arteritis or solid organ transplanation) since many individuals will actually have asymptomatic vertebral fractures at baseline and would therefore merit more aggressive treatment. The clinical information supplied on the requisition should clearly state that the examination is being done to look for osteoporotic compression fractures.

From the Manitoba Bone Density Program

This newsletter and other program information are available through the Manitoba Health web site (http://www.gov.mb.ca/health/programs/mbd/index.html).