Unusual fractures in osteoporosis

Osteoporosis is common in our aging population and is a major reason for loss of independence and deterioration of quality of life. Medications are often required to treat osteoporosis and such treatments, particularly drugs of the bisphosphonate class, are used frequently. Very rare fractures of the femur (thigh bone), termed ‘atypical femoral fractures’ (AFF), have been associated with long-term bisphosphonate use. Similar to other osteoporotic fractures, these AFF fractures may occur spontaneously or with little trauma.

The cause of AFFs is not yet known and there is an association with both long-term bisphosphonate use as well as other antiresorptive therapies used to treat osteoporosis patient. AFFs are very rare and represent a minority of fractures which occur in patients with osteoporosis. The reports of series of patients with AFFs describe patients who have a history of taking bisphosphonate therapy, and a significant proportion who have never been exposed to bisphosphonate.

Patients who present with AFFs often describe prior thigh discomfort. The fractures are differentiated from other osteoporotic fractures based on characteristic x-ray and clinical features. In an attempt to unify the reporting and recognition of AFFs, the American Society of Bone and Mineral Research (ASBMR), developed guidelines in 2010 and 2014 regarding AFF diagnostic criteria and proposed management. AFFs are often under-recognized by both radiologists and orthopedic surgeons.

A recent study, at the University of British Columbia, studied the frequency of AFFs, compared the ASBMR guidelines, and assessed risk factors associated with these fractures. A total of 3084 patients were diagnosed with a hip fracture between 2005 and 2013 at Vancouver General Hospital. This time interval was over a period when AFFs were first becoming recognized. Of these 3084 patients, 204 were coded as having subtrochanteric fractures (a location lower down the femur and required to diagnose AFF), of which 24 met the radiologic criteria for AFFs. Only one of these AFFs, however, had been diagnosed by the doctor reading the original x-ray images at the time the patient presented to the hospital; 23 out of 24 AFFs were not correctly recognized.

Interestingly, it was also found that 75% of the patients with AFFs were Asian (out of all proportion to people of this ethnicity living in Vancouver) and all the AFF subjects were women. It was also found that 75% of these patients had taken bisphosphonate medications in the preceding year. Similar to other series, AFFs also occurred in many patients who were not on any osteoporosis medications.

This study highlights some limitations of hospital discharge databases in trying to determine the cause of a new finding or disease. Most of the AFFs were not identified on hospital documentation and required a re-review of radiology images. The inaccuracies of hospital discharge coding makes quality-of-care audits very difficult to interpret. Raising awareness of diagnostic criteria for AFF

should help with hospital record keeping and transfer of this information to relevant administrative databases. Our audit is reassuring in that the frequency of AFF is very low as compared to the frequency of typical hip fractures. This information may help to reverse the trend of patients discontinuing bisphosphonate therapy, leading to increases in fracture risk.

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Publication

Audit of Atypical Femoral Fractures and a Description of Some of Their Features.
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