

## Atypical femoral stress fractures in bisphosphonate-free patients

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The long-term safety of bisphosphonates has been questioned in case series [1, 2] in which atypical femoral stress fractures has been seen with its prolonged use. Atypical femoral stress fractures have distinctive radiographic characteristics: transverse or short oblique configuration, associated with focal or diffuse cortical thickening, so-called “beaking”. However we identified four patients (five fractures) from our series of 50 patients (8%) who fulfilled these radiographic pattern but who were never put on bisphosphonates. The ages of the cases were 50, 53, 66, 70 and 78 years at time of fracture.

Two patients had normal BMD, one patient (with bilateral atypical fractures) was osteopenic, and one patient did not have BMD available. In all these patients, there were no prodromal symptoms, no history of hormonal therapy and their 25-hydroxyvitamin D measurements were normal (range 21.9–26.1 ug/L). They had no history of renal impairment, steroids usage or any endocrinological dysfunction (except one patient who had diabetes mellitus). One patient had breast cancer treated more than 20 years ago. Her procollagen type I amino-terminal propeptide level was



**Fig. 1** Cases 1, 2, 3A, 3B (same patient), 4. Radiographs of the four patients who sustained bisphosphonate-type fracture but who were actually bisphosphonate-free

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elevated (169 ug/L). Bone turnover markers were normal for the rest of the patients except for one who refused blood investigations. One of these patients had a history of intermittent omeprazole usage for 4 years for gastritis. Phone interviews, home visits and chart reviews were made to ensure the accuracy of their medication history.

Our experience is that atypical femoral stress fractures can also occur in bisphosphonate-free patients, though these are low numbers (Fig. 1). It is also interesting to note that none of these patients were proven osteoporotic. Possible metabolic abnormalities that are accentuated by bisphosphonates

should be explored in patients who have been diagnosed with bisphosphonate-associated fractures.

## References

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