

# Primary hyperparathyroidism and osteoporosis

## A case report

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### Summary

A case of osteoporosis secondary to primary hyperparathyroidism is reported. A 55-year-old woman presented with a history of persistent lumbar backache for 3 years; numerous radiographs taken during this period had shown 'osteoporosis in keeping with age'. Referral to the Endocrine Clinic to evaluate the osteoporosis resulted in baseline investigations which revealed a raised serum calcium level, further investigation of which led to the diagnosis of primary hyperparathyroidism. Recent studies have shown that, over the past two decades, diffuse undermineralization of the bones (osteopenia) is the most common radiological feature in primary hyperparathyroidism.

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Although the endocrinopathies are well-recognized in the aetiology of osteoporosis, primary hyperparathyroidism is an unusual cause, found mainly in middle-aged and elderly women.<sup>1</sup> The role of parathyroid hormone excess in the pathogenesis of osteoporosis is not clear at present, but it has been shown that this hormone can accelerate bone loss in an osteoporotic pattern.<sup>2</sup>

### Case report

A 55-year-old woman presented with a 3-year history of low backache, initially associated with intermittent pain which later became persistent, severe and unresponsive to analgesics. She also complained of intermittent episodes of 'hot flushes', nausea, malaise and vague abdominal pain. The patient had undergone a hysterectomy (without oöphorectomy) 13 years before the onset of the presenting symptoms. She was seen at the Mature Women's Clinic (Department of Gynaecology) at Groote Schuur Hospital because of 'hot flushes' and the backache; lumbar spine radiographs revealed diffuse osteopenia, which was reported as being 'osteoporosis in keeping with age'. She was treated with analgesics and cyclical oestrogen therapy, but the back pain became relentless and intractable and she was referred to the Endocrine Clinic for assessment and treatment of the severe 'osteoporosis'. Baseline investigations revealed a raised serum calcium level of 3,25 mmol/l (normal 2,2 - 2,6 mmol/l) and a raised serum alkaline phosphatase value of 142 U (normal 65-80

U). A skeletal survey was negative except for diffuse osteopenia in the skull, clavicles, lumbar spine and pelvis — but *no* evidence of bone fracture. Subsequent investigation of the hypercalcaemia confirmed the diagnosis of primary hyperparathyroidism. She underwent surgical exploration of the neck and a parathyroid adenoma was removed. Calcium levels then returned to normal and have remained so over the 3 postoperative months. There has also been some subjective improvement of the backache.

### Discussion

There has been a recent trend for patients with primary hyperparathyroidism to present with radiological evidence of diffuse osteopenia as opposed to the more classic changes of subperiosteal bone resorption or osteitis fibrosa cystica. In a study of 138 cases of primary hyperparathyroidism from 1930 to 1960, it was found that between 1930 and 1939, 53% of patients had symptomatic and radiographic evidence of osteitis fibrosa cystica, whereas 21% showed the same features between 1949 and 1960.<sup>3</sup> More recently, between 1965 and 1973, 9% of 57 patients with primary hyperparathyroidism had skeletal pain and radiographic evidence of osteitis fibrosa cystica.<sup>4</sup> In a recent 3-year study at the Mayo Clinic, of 319 patients with primary hyperparathyroidism, none had radiographic evidence of osteitis fibrosa cystica, and 14 patients showed diffuse osteopenia associated with vertebral crush fractures on radiography.<sup>5</sup> However, it is well recognized that backache associated with lumbar spine osteopenia need show no evidence of vertebral fracture on radiographs; the backache is thought to be due to the development of microfractures in the vertebral body which are undetectable on ordinary radiographs.<sup>6</sup>

Thus it is clear that over the past 2 decades there has been an increasing tendency for patients with primary hyperparathyroidism to present with radiographic evidence of diffuse osteopenia rather than osteitis fibrosa cystica. The reason for the changing pattern of radiological presentation is not clear at present.

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