PARATHYROID OSTEODYSTROPHY

Report of a Case

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A woman of sixty-nine was admitted with a fracture of the neck of the left femur (Fig. 1) sustained while she was mounting the stairs in her home. Her subsequent clinical course prompted a careful inquiry into her history.

From the age of twenty she had suffered from recurrent attacks of indigestion, haematemesis, anaemia, tiredness, vague pains in her bones and swelling of the ankles. Certain events stood out clearly in her memory. At the age of forty-nine she fell downstairs, injuring her back, as a result of which she was confined to bed for approximately two years and developed a kyphosis. At the age of sixty she noticed that her legs below the knees became swollen and she also experienced aches and pains in her bones, particularly in her back. At sixty-six she suffered from a severe attack of indigestion associated with vomiting, upper abdominal pain and haematemesis. At that time the abdomen was explored for suspected carcinoma of the stomach: no gastric neoplasm was found but a uterine fibroid and a cyst of the ovary were removed. Thereafter she developed quite severe pains in her bones, which continued until the time of her admission.

Progress—During the routine manipulation to reduce the fracture of the femoral neck a spiral fracture of the shaft of the femur was produced. At the subsequent nailing operation it was noted that the bone was abnormally soft. A biopsy was taken but the pathological examination showed no conclusive findings.

Investigations—The blood calcium was 11.3 milligrams per cent, phosphorus 2.9 milligrams per cent, alkaline phosphatase 25 units. Blood picture was normal except for diminished haemoglobin value (70 per cent). Blood urea was 30 milligrams per cent and plasma proteins 6.5 grammes per cent. Urine consistently contained Bence-Jones proteose and a trace of albumen. Two sternal punctures gave films suggestive of multiple myelomatosis. Further biopsy of one tibia was inconclusive.

Further investigations three months later showed that the blood calcium had risen to 13.6 milligrams per cent. Complete radiographic examination revealed generalised osteoporosis with cystic changes in several bones (Figs. 2 to 7). Biopsy of one tibia showed changes

FIG. 1

Initial radiograph showing fracture of the femoral neck and osteoporosis of the upper end of the bone.

FIG. 2
Right tibia.

FIG. 3
Right humerus.

FIG. 4
Left radius and ulna.

FIG. 5
Skull.

FIG. 6
Spine.

FIG. 7
Left hand.

FIG. 8

FIG. 9

Figure 8—Section from tibia showing spicules of bone with many giant cells and much fibrosis ($\times 240$).
Figure 9—Another area. Numerous spicules of bone, some of which appear to have been split by fibrous tissue ($\times 240$).

consistent with osteitis fibrosa cystica (Figs. 8 and 9). Bence-Jones proteose was still present in the urine.

Treatment—The neck was explored and a large tumour of the right superior parathyroid gland was removed (Fig. 10). Macroscopically, the specimen showed general hyperplasia of

FIG. 10
The parathyroid tumour removed from the neck. The scale is marked in centimetres.

FIG. 11

FIG. 12

Figure 11—Photomicrograph of a section of the parathyroid tumour ($\times 60$). Figure 12—A section of the tumour seen in higher magnification ($\times 530$).

the gland without evidence of a localised adenoma. Microscopically, the cells were all of a pale, oxyphil type. There were a few cells with exceptionally large hyperchromatic nuclei (Figs. 11 and 12).

Later progress—Four days after operation, Bence-Jones proteose disappeared from the urine. On the eighth day she developed a severe attack of tetany which was controlled with some difficulty with calcium lactate, calcium gluconate and calciferol.

When the patient was last reviewed two years and three months after operation she had made good progress: the fractures of the femur had united, and the cystic lesions of the bones had filled in, but considerable osteoporosis was still present. She was in good health and walked with the aid of a stick.

DISCUSSION

Although the diagnosis of parathyroid osteodystrophy was suspected at the time of the nailing operation the serum calcium was at that time within normal limits and there were a number of unusual features that threw doubt on the validity of that diagnosis. It seems possible that the history extended back forty-nine years to the time when the patient first developed symptoms of aches and pain in her bones, anaemia, and symptoms of peptic ulceration at the age of twenty. There were also four periods when her symptoms were definitely worse: first, the onset mentioned above; second, when at the age of forty-nine she fell and hurt her back and was in bed for two years and developed a kyphosis of the spine; third, when severe oedema of the legs below the knees developed at the age of sixty; and fourth, when she was admitted to hospital for laparotomy for suspected carcinoma of stomach. At these times, the pains in the bones were particularly bad, although she was a little vague about their severity at the time of onset of symptoms forty-nine years ago.

Norris (1947) from a review of 322 cases published in the literature, concluded that the duration of parathyroid osteodystrophy was much longer than was generally realised and reported one case of thirty-nine years' duration. He also observed that in some cases there appeared to be periods in the course of the disease in which the severity of the symptoms was increased. Further, the obstinate anaemia from which the patient suffered fits in with Rienhoff's (1950) observation that anaemia is common in all conditions in which hypercalcaemia is present. Gastric and duodenal ulcers in association with hyperparathyroidism have been reported by Rogers *et al.* (1947) and Black and Ackerman (1950). The presence of Bence-Jones proteose in the urine was reported by Snapper (1949).

This was my first contact with a case of hyperparathyroidism and the features which were at first rather confusing became clearer as the investigations were continued and the literature surveyed. Since approximately 40 per cent of parathyroid tumours present themselves as generalised osteitis fibrosa cystica (Hoffmann 1952), it is hoped that this case report may help to draw attention to some of the less common or less recognised features of the condition.

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