A pain in the arm

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Case report

A 47-year-old woman went to her physician with left upper arm pain that had been present for several months. She characterized the pain as a dull ache involving the outer aspect of the arm. The pain was worse with exercise or activity and interfered with a range of motions. On further questioning, she indicated that she felt generally weak, claimed that her heart beat faster, had noted nocturia, and an increase in thirst. She had undergone a cholecystectomy, and hysterectomy, but otherwise had been in good health. She had never had a kidney stone or an ulcer. Her blood pressure was 165/100 mmHg. Examination of the left upper arm revealed a 6×4 cm tender firm mass at the insertion of the deltoid. The mass interfered with abduction of the arm and made retroflexion, anteflexion, and rotation of the arm almost impossible. Arterial and venous blood flow, as well as neurological examination of the arm were unremarkable, as was the rest of her physical examination. A radiograph of the arm showed subperiosteal reabsorption with a lytic lesion along the shaft of the humerus and soft tissue swelling. Magnetic resonance imaging (Figure 1) revealed an extensive soft tissue mass adjacent to, and communicating with, the humerus. The radiologist was unable to rule out the possibility of a malignant tumour. Serum electrolytes were: Na 141, K 3.7, HCO₃ 21, Cl 108, Ca 3.15, PO₄ 0.41 mmol/l, respectively. The creatinine concentration was 82 µmol/l, with a creatinine clearance of 82 ml/min. The protein excretion was 230 mg/24 h. The alkaline phosphatase was 22.7 µmol/sl (normal < 4.9 µmol/sl) and the parathyroid hormone concentration was 97 pmol/l (normal < 7.6 pmol/l). A radionuclide bone scan showed an increased uptake in the upper left humeral shaft, but nowhere else in the skeleton. Radiographs of the hands, skull, and axial skeleton were normal. A slit lamp examination of the cornea was normal. The kidneys showed no evidence of calcification. An ultrasound examination of the thyroid gland revealed a 1 cm diameter mass adjacent to the right upper lobe of the gland. A neck exploration and biopsy of the left humerus were performed which revealed a solitary parathyroid adenoma and a brown tumour (Figure 2). Post-operatively she did well; the tumour and arm pain

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however, since secondary hyperparathyroidism is so much more common than primary hyperparathyroidism, most brown tumours are encountered by nephrologists [1]. In our patient, primary hyperparathyroidism presented as a brown tumour, although she also admitted polyuria, polydipsia, weakness, and undue fatigue. Her serum chemistries were classic with hypercalcaemia, hypophosphataemia, and mild, hypercholoraemic metabolic acidosis. Although we strongly suspected the presence of a brown tumour, we elected to biopsy the arm lesion because of the magnetic resonance imaging study and the occasional report of an association between brown tumours and sarcomas of bone [2]. Histologically, the diagnosis is not easy and the distinction between benignity and malignancy can be confusing. In our patient, no other skeletal evidence of hyperparathyroidism were present which made diagnostic considerations of a pain in the arm more difficult than might otherwise have been the case.

Teaching point

The classic triad of primary hyperparathyroidism consisting of ‘bones, stones, and groans’ is unusual. Fatigue, weakness, constipation, and anorexia on the other hand are common. Osteitis fibrosa cystica and brown tumours are rare in primary hyperparathyroidism while renal stones are fairly common; our patient was an exception to both. In addition to hypercalcaemia and hypophosphataemia, mild hyperchloremic metabolic acidosis is an important clue.

Discussion

Brown tumours are slightly more common in primary than in secondary hyperparathyroidism (3 versus 2%);