

IMAGE IN NEPHROLOGY

Metastatic calcinosis cutis in a dialysis patient

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ABSTRACT

Metastatic calcinosis cutis is an uncommon complication of end-stage kidney disease but has severe and disabling effects. Its development is attributed to disorders of calcium and phosphate metabolism associated with secondary hyperparathyroidism. The mainstay of treatment remains medical therapy; however, in refractory cases a parathyroidectomy is indicated. We describe the case of a 22-year-old female with refractory hyperparathyroidism treated with a subtotal parathyroidectomy resulting in complete resolution of metastatic calcinosis cutis of the hands. Clinicians should be aware that this complication can occur soon after the initiation of dialysis and that rapid, complete resolution can be achieved with parathyroidectomy.

Keywords: hyperparathyroidism; parathyroidectomy; kidney failure.

CASE PRESENTATION

A 22-year-old female, with a background of end-stage kidney disease (ESKD) of unknown aetiology, presented with painful, asymmetrical nodules affecting both hands. She had been receiving kidney replacement therapy for 15 months. She was switched to haemodialysis one month previously following failure of peritoneal dialysis. Physical examination revealed hard, tumoral, fixed, non-erythematous and non-tender nodules affecting the metacarpophalangeal (MCP) joints bilaterally and the proximal interphalangeal joint of the second digit on the right hand (Figure 1, panel A). Hand radiographs revealed carpal and MCP peri-articular and subcutaneous calcified nodules without overt bone changes (Figure 1, panel B). She was receiving a phosphate-restricted diet, alphacalcidol 1 µg daily and calcium acetate 4 g daily in divided doses. Laboratory tests revealed a serum parathyroid hormone (PTH) concentration of 104.1 pmol/L, a corrected serum calcium concentration of 2.60 mmol/L and a serum phosphate concentration of 2.46 mmol/L. A parathyroid scan revealed three hyperactive parathyroid glands. A subtotal parathyroidectomy was performed with histology findings consistent with parathyroid hyper-

plasia. There was dramatic resolution of the hand nodules one month postoperatively (Figure 1, panel C) with a serum PTH concentration of 1.0 pmol/L, a corrected serum calcium concentration of 2.22 mmol/L and serum phosphate of 1.06 mmol/L.

DISCUSSION

Metastatic calcinosis cutis (MCC) is a severe complication of ESKD occurring in 0.5–3% of this population with a mean occurrence of 3–5 years following dialysis initiation [1]. The term calcinosis cutis is used to describe the deposition of insoluble calcium salts within the cutaneous and subcutaneous tissue. Five subtypes have been described [2]. In our case, MCC was present because the calcification was limited to the skin and the hand radiograph revealed no bone erosions [2,3]. Deposits frequently occur at periarticular sites, mostly at larger joints such as the hips and shoulders [1]. However, non-cutaneous sites frequently include blood vessels, kidneys, and lungs [4]. Other conditions that have been associated with MCC include sarcoidosis, hereditary osteodystrophy, and malignancy. The pathogenesis is unknown but is



Figure 1, panel A. Nodules predominantly affecting the metacarpophalangeal joints of both hands.



Figure 1, panel B. Plain radiograph showing periarticular carpal, metacarpophalangeal joints and subcutaneous calcified nodules without bony erosions.



Figure 1, panel C. Photograph taken one month following subtotal parathyroidectomy, showing complete resolution of hand nodules.

thought to involve minor traumatic injury with bleeding at periarticular sites, which elicits an inflammatory reaction [5].

Symptoms are usually related to local complications of the nodules such as joint stiffness, nerve compression, pain, the development of cutaneous fistulae and secondary infection [1]. MCC remains a diagnosis of exclusion and is made on laboratory findings of hyperparathyroidism and calcification on simple radiographs without bony erosions. Where uncertainty remains, a computed tomography scan may be used which shows layers of loculated fluid and calcium deposits, referred to as the sedimentation sign [5], and can also assist with determining the extent of disease.

MCC requires surgical parathyroidectomy. Our patient had a remarkable response following surgical intervention with complete resolution. Therefore, as was demonstrated in our case, MCC can occur soon after the start of dialysis, and rapid and complete resolution can be achieved with parathyroidectomy.

Conflict of interest

The authors have no conflict of interest to declare.

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