

Extensive Calcinosis Cutis in Association with Systemic Lupus Erythematosus

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Sir,

Calcium deposits in the skin sometimes occur in association with certain connective tissue diseases, particularly scleroderma and dermatomyositis (1). This finding is extremely rare in systemic lupus erythematosus (SLE) (2). In most cases of calcinosis cutis in SLE, the deposition of calcium is usually seen under the cutaneous lupus lesions, and the amounts are relatively small. We report here a 49-year-old woman featuring SLE with extensive subcutaneous and muscular calcifications. Over time, the calcification became more diffuse and extended into the subcutaneous and muscular layer of her pelvis and extremities, forming large plate-like calcifications. Only 16 such cases of extensive calcinosis cutis in SLE have been reported in the literature (3–12).

CASE REPORT

A 49-year-old woman with a history of SLE fulfilling ACR criteria initially presented 17 years ago with complaints of photosensitivity, Raynaud's phenomenon, arthralgias, malar rash and discoid skin lesions associated with scalp alopecia. She was subsequently noted to have a positive antinuclear antibody (ANA), proteinuria, and a renal biopsy revealing a membranous glomerulonephropathy. The patient had other complications of her disease, including avascular necrosis of both hips and probable steroid-induced myopathy. In addition, she was noted to have marked calcification of the soft tissues of her arms and thighs, pelvic areas, breasts, and uterus, which was evident both on examination and in radiographic studies.

On her current presentation, she had several red plaques on her scalp, with thick, adherent scale, and a scarring alopecia. Plaques were also seen on her back, chest, and arms with varying amounts of associated atrophy and scarring. In addition, she had multiple stony, hard papules and nodules on the dorsum of both hands, over both elbows, over both thighs and below the left patella (Fig. 1).

Histopathologic examination of a biopsy of a discoid lesion from her left arm revealed skin with an atrophic epidermis and degeneration of the basal layer. Mild perivascular inflammatory infiltrates were also present. The collagen bundles of the dermis appeared thickened. Radiologic studies demonstrated far more extensive subcutaneous and muscular calcification in the pelvis and extremities (mainly thighs and forearms).

Laboratory studies revealed a positive ANA titer of 1:320 with a speckled pattern. Tests for anti-centromere antibody, SSA, SSB, anti-smooth muscle antibody, anti-double-stranded DNA antibody, anti-Scl 70 antibody, and anti-RNP antibody were all negative. The patient's serum creatine kinase was within normal limits.

Radiographs of the extremities showed diffuse, irregular calcific densities that often took a reticular pattern. This extensive calcification was found predominantly in the subcutaneous layer but also partially in the muscular layer and



Fig. 1. Hard papules and nodules over right elbow.

was more impressive around the thighs, where it appeared plate-like. Mottled calcifications were also seen in the pelvic midline in association with a mass, possibly a calcified uterine fibroid. Compared with studies done 2 years earlier, newer films showed increased prominence of the soft tissue calcifications. Mammography also showed retroareolar vascular calcifications. Esophageal manometric studies were within normal limits. EMG results were also within normal limits.

DISCUSSION

Clinically, calcinosis cutis may be subdivided into calcinosis circumscripta or calcinosis universalis. Calcinosis circumscripta refers to calcification of a localized area. These areas are always formed in the skin and subcutaneous tissues and occur most commonly over joints (2). Calcinosis universalis is an uncommon disorder of the lower extremities. As the disease progresses, muscles, ligaments, and tendons become involved (2).

Calcinosis cutis has been well documented in association with connective tissue diseases such as scleroderma and dermatomyositis. However, calcinosis cutis has rarely been documented in association with SLE (2). The calcifications in scleroderma tend to be small and localized in the hands, feet, knees and hips, while in dermatomyositis the calcifications tend to be more extensive in muscles, tendons, skin, and

subcutaneous tissue (7). The calcifications in SLE tend to be on the skin or subcutaneous tissue of the forearms, fingers, buttocks, thighs, legs, knees, and ankles.

In 1969, Kabir & Malkinson (2) reported the first two cases of patients with SLE and calcinosis cutis. Most of the calcifications in the reported cases were localized, but 10 reports of 16 cases described diffuse calcifications (3–12). The calcifications were described as large and plate-like and that usually began as small calcifications and formed plaques over time. This is a unique feature that is shared by our patient.

The cause of these aberrant calcifications in patients with normal calcium metabolism remains a mystery. Several theories have been postulated to explain dystrophic calcification, but the etiology remains unknown. It is generally presumed to be associated with trauma or tissue damage. One theory suggests that tissue necrosis due to chronic inflammation or injury may cause release of alkaline phosphatase by damaged lysosomes (10, 11). Alkaline phosphatase acts on organic phosphate (which usually inhibits crystal formation) thus possibly allowing calcium precipitation. Another theory proposed is that of an external pressure phenomenon producing ischemia in someone with steroid-induced fat cell hypertrophy (11). Some suggest that phosphate bound to denatured proteins of necrotic cells serves as a nidus for calcium deposition (9). It is hard to speculate on the specific cause in our case. However, our patient did have extensive avascular necrosis, which could have been a contributing factor. Also, the thickened collagen bundles observed in our patient's biopsy supports the hypothesis of extensive tissue damage, with repair characterized by increased collagen deposition. This collagen may then serve as a matrix for calcium precipitation (8).

The treatment of calcinosis cutis is still not very effective. Only one case has been reported with a spontaneous dissolution during a period of one year with continued steroid therapy (7). Intralesional injections of corticosteroids have had limited success (12). Etidronate disodium, a bisphosphonate that inhibits biomineralization in high doses, has been administered orally to prevent postoperative recurrences of calcium deposits (11, 12). However, withdrawal of the drug could lead to

exacerbations of ectopic calcification (12). Some authors have reported the use of aluminum hydroxide, an oral phosphate-binding agent, as effective (10, 12). Finally, there have been three reported cases of surgical excision of calcinosis cutis, with symptomatic relief and lack of recurrence in follow-up years (11, 12). This indicates that surgical excision should be considered for symptomatic relief and could become the treatment of choice in the future.

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