Calcinosis Cutis Universalis in a Patient with Systemic Sclerosis

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ABSTRACT

Systemic sclerosis (Scl) is a multisystemic autoimmune disorder that is characterized by immune dysregulation, vasculopathy, and overproduction of collagen leading to skin and internal organ fibrosis. Calcinosis is a well known manifestation of Scl, which occurs the deposition of calcium in the dermis and subcutaneous tissues with normal levels of serum calcium and phosphorus. However, calcinosis on extremities and trunk is unfrequently seen. Herein we present the case of a 44-year-old female patient with diffuse cutaneous systemic sclerosis who has calcinosis situated bilaterally at upper and lower extremities and trunk which is an unfrequent condition.

Keywords: Autoimmune disease; systemic sclerosis; calcinosis

CASE REPORT

Verbal informed consent was obtained from the patient who participated in this study.

A 44-year-old female patient has been suffering diffuse cutaneous Scl for 25 years with skin, pulmonary and gastrointestinal involvement and musculoskeletal manifestations disabling the deformation of fingers and painful ulcerations on hands and feet.
Her initial symptoms were Raynoud’s phenomenon, fatigue and polyarthralgia, then swelling in fingers and after 8 years she noticed progressive skin thickening, pigmentation changes on her face and hands, and also heartburn, dysphagia and exercise dyspnea.

Physical examination revealed Raynoud’s phenomenon, a marked skin thickening of hands, forearms and face with hipo and hiperpigmented areas, and also digital healed ischemic ulcers on hands and heels, a characteristic facies for scleroderma including telengectasias, small mouth, periorbital wrinkles, thin nose, the reduced flexibility of facial skin and a remarkable reduction in the maximum oral aperture, the anterior teeth appeared more prominent because of the tight perioral skin. Muscleskeletal examination showed bilaterally flexion contractures of the hand fingers, the shortened distal of hand fingers, muscle atrophy and weakness of her arms and thighs leading significant disability.

Autoimmune serology revealed positive for rheumatoid factor, antinuclear antibody (titres of 1/320 with nucleolar pattern) and anti-Scl-70 antibody. Anticentromere antibodies, ds-DNA (native DNA), Sm and ribonucleoprotein antibodies were negative. Endoscopic examination showed gastroesophageal reflux and esophageal dysmotility. Thorax tomography revealed the signs for interstitial lung disease.

Radiography of hand bones showed osteopenia, osseous resorption of the digital tuft, soft tissue calcinosis and joint ankylosis (Figure 1a).

Severe and extensive soft tissue calcification situated in nearly joints of bilateral upper and lower extremities, sternoclavicular, costa-chondral junctions and tuberositas ischii were revealed by plain radiographs (Figure 1c, Figure 1d, Figure 1e, Figure 1f).

She was followed up with low dose corticosteroid and acetylsalicylic acid, calcium chanel blocker, antacids and pain medication.

**DISCUSSION**

Abnormal calcium deposition into skin and subcutaneous tissues is independent of the serum levels of calcium and phosphorus. Tissue hypoxia, mechanical stress or hipovascularity induce inflammation and macrophage activation, and various mediators causes increased influx of calcium to cells. Calcinosi is commonly located in pressure areas such as extensor surfaces, it can lead to ulceration of the skin and infection.

Calcinosi cutis can be palpable as subcutaneous nodules or visible as white hard papules on physical examination, and is seen on radiography. It is usually symmetrically distributed to the extremities, rarely in the trunk. A cohort of Mexican patients with Scl showed the high prevalence of calcinosi, the most common affected sites were the hands (83%), proximal upper and lower extremity (27% and 22% respectively).

In our patient with diffuse cutaneous Scl, the symmetrical distribution of the sub cutaneous calcinosi was radiologically revealed on the hands, the extremities and the trunk, and they were nonpalpable.
The calcinosis can occur superficial, exophytic and lead to ulceration, secondary infection with significant pain. Koutaissoff et al. reported that calcinosis was associated with longer disease duration, higher skin thickening, more current digital ulcers and pitting scars, and a more frequent history of digital gangrene. In our patient with a longer disease duration and a marked skin fibrosis, there were also infected and ulcerated lesions on heels.

Calcinosis cutis is difficult to treat. The usefulness of several medications such as calcium channel blockers, warfarin, biphosphonates, aluminium hydroxide, minocyclin and surgical excision was reported as case reports and case series. A standardised treatment approach is lacking. She has taken low dose corticosteroid and acetylsalicylic acid, calcium channel blocker, anti-acid, biphosphonate, we did not observe a significant response.

On physical examination of the patients with SSc, the presence of calcinosis should be considered because it can lead to ulceration and infection of the skin and disability.

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**Conflict of Interest**

No conflicts of interest between the authors and/or family members of the scientific and medical committee members or members of the potential conflicts of interest, counseling, expertise, working conditions, share holding and similar situations in any firm.

**Authorship Contributions**

This study is entirely author’s own work and no other author contribution.
REFERENCES

1. LeRoy EC, Black C, Fleischmajer R, Jablonska S, Krieg T, Medsger TA Jr, et al. Scleroderma (systemic sclerosis): classification, subsets and pathogenesis. J Rheumatol. 1988;15(2):202-5. [PubMed]

2. Boulman N, Slobodin G, Rozenbaum M, Rosner I. Calcinosis in rheumatic diseases. Semin Arthritis Rheum. 2005;34(6):805-12. [CrossRef] [PubMed]

3. Avouac J, Guerini H, Wipff J, Assous N, Chevrot A, Kahan A, et al. Radiological hand involvement in systemic sclerosis. Ann Rheum Dis. 2006;65(8):1088-92. [Crossref] [PubMed] [PMC]

4. Onishi S, Homma Y, Hasegawa H, Yasukawa M. Multiple tumoral calcinosis in systemic sclerosis. Intern Med. 2013;52(23):2689. [Crossref] [PubMed]

5. Düzgün N. Cutaneous calcinosis in a patient with limited scleroderma: CREST syndrome. Eur J Rheumatol. 2107;4(4):305-6. [Crossref] [PubMed] [PMC]

6. Cruz-Domínguez MP, García-Collinot G, Saavedra MA, Medina G, Carranza-Muleiro RA, Vera-Lastra Ol, et al. Clinical, biochemical, and radiological characterization of the calcinosis in a cohort of Mexican patients with systemic sclerosis. Clin Rheumatol. 2017;36(1):111-7. [Crossref] [PubMed]

7. Koutaisoff S, Vanthuyne M, Smith V, De Langhe E, Depresseux G, Westhovens R, et al. Hand radiological damage in systemic sclerosis: comparison with a control group and clinical and functional correlations. Semin Arthritis Rheum. 2011;40(5):455-60. [Crossref] [PubMed]

8. Reiter N, El-Shabrawi L, Leinweber B, Berghold A, Aberer E. Calcinosis cutis: part II. Treatment options. J Am Acad Dermatol. 2011;65(1):15-22. [Crossref] [PubMed]

9. Balin SJ, Wetter DA, Andersen LK, Davis MD. Calcinosis cutis occurring in association with autoimmune connective tissue disease: the Mayo Clinic experience with 78 patients, 1996-2009. Arch Dermatol. 2012;148(4):455-62. [Crossref] [PubMed]