CASE REPORT

DOI: 10.5336/caserep.2019-65627

# Calcinosis Cutis Universalis in a Patient with Systemic Sclerosis

Nurşen DÜZGÜN[a]

[a]Ufuk University Faculty of Medicine, Department of Internal Medicine, Division of Rheumatology, Ankara, TURKEY

**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 stiutated bilaterally at upper and lower extremities and trunk which is an unfrequent condition.

**Keywords:** Autoimmune disease; systemic sclerosis; calcinosis

Systemic sclerosis (Scl) is a systemic disorder of connective tissues affecting skin and internal organs/systems such as the cardiovascular, pulmonary, gastrointestinal, renal and musculoskletal systems, is characterized by hardened skin due to mainly collagen accumulation occurring in both skin and viscera. Disease manifestations vary from limited skin involvement with minimal systemic involvement (limited cutaneous Scl) to widespread skin involvement accompanied by internal organ involvement (diffuse cutaneous SSc). These two forms differ mainly in regards to extent of skin involvement, autoantibody association, and the pattern of organ involvement.[1]

Calcinosis cutis develops in connective tissue diseases, mainly systemic sclerosis, systemic lupus erythematosus and dermatomyositis, as result of the deposition of calcium in the dermis and subcutaneous tissues with normal serum calcium and phosphorus levels.[2] It is a well-recognized manifestation of Scl occurring in up to 25% patients, is most commonly localised in the hands, however it occurs also around the other joints.[3] Calcinosis cutis universalis is characterized by diffuse involvement of subcutaneous and fibrous structures of muscles and tendons. The presence of calcinosis multisituated is unfrequent in diffuse systemic sclerosis. Calcinosis causes pain, local inflammation, irritation, muscle atrophy, ulceration with secondary infection, joint contractures and severe disability.

Herein we present a rare case with diffuse cutaneous systemic sclerosis with calcinosis on her extremities, thorax and pelvic region and disability.

## 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 cutenous Scl for 25 years with skin, pulmonary and gastrointestinal involvement and musculoskletal manifestations disabling the deformation of fingers and painful ulcerations on hands and feet.

**Correspondence:** Nurşen DÜZGÜN
Ufuk University Faculty of Medicine, Department of Internal Medicine, Division of Rheumatology, Ankara, TURKEY
**E-mail:** duzgun@medicine.ankara.edu.tr

Peer review under responsibility of Turkiye Klinikleri Journal of Case Reports.

***Received:*** 19 Feb 2019 ***Received in revised form:*** 06 May 2019 ***Accepted:*** 02 Jul 2019 ***Available online:*** 03 Jul 2019

Her initial symptoms were Raynoud's phenomenon, fatique 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 exersion dyspne.

Physical examination revealed Raynoud's phenomenon, a marked skin thickening of hands, forarms 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. Musculeskletal examination showed bilaterally flexion contractures of the hand fingers, the shortened distal of hand fingers (Figure 1a), 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, osseos resorbtion of the digital tuft, soft tissue calcinosis and joint ankylosis (Figure 1b).

Severe and extensive soft tissue calcification sitiuated 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 acide, calcium chanel blocker, antacids and pain medication.

## DISCUSSION

Abnormal calcium deposition into skin and subcutanous 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.[4] Calcinosis is commonly located in pressure areas such as extensor surfaces, it can lead to ulceration of the skin and infection.

Calcinosis cutis can be palpable as subcutaneous nodules or visible as white hard papules on physical examination, and is seen on radiography. It is usually symetrically distributed to the extremities, rarely in the trunk.[5] A cohort of Mexican patients with Scl showed the high prevalance of calcinosis, the most common affected sites were the hands (83%), proximal upper and lower extremity (27% and 22% respectively).[6]

In our patient with diffuse cutaneous Scl, the symetrical distribution of the sub cutaneous calcinosis was radiologically revealed on the hands, the extremities and the trunk, and they were nonpalpable.

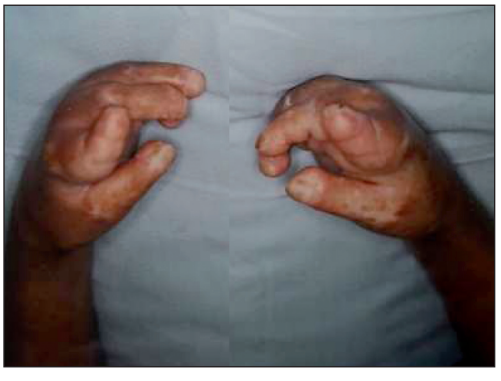

**FIGURE 1a:** Sclerodactyly, shortened and deformed hand fingers, pigmentation changes of the skin.

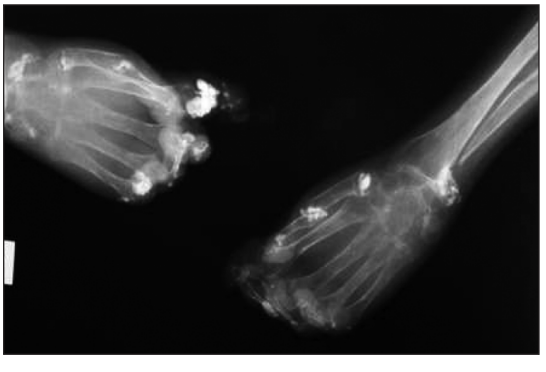

**FIGURE 1b:** Radiograph of hand bones showing osteoporosis, flexion of fingers, joint ankylosis, acroosteolysis, soft tissue calcinosis.

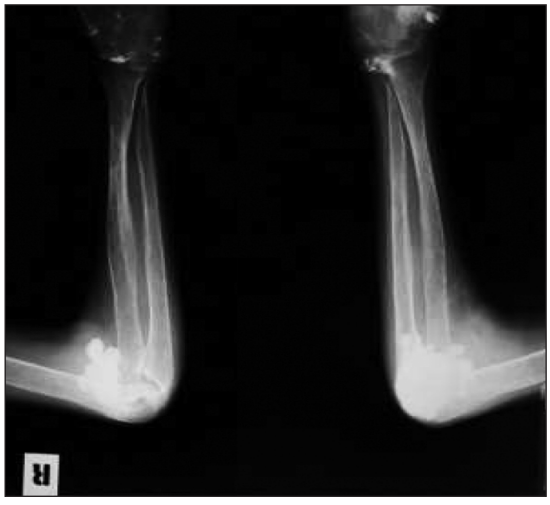

**FIGURE 1c:** Radiographic aspects of the bilateral elbow with tumoral calcification.

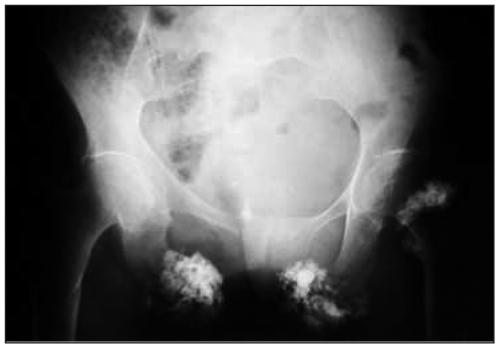

**FIGURE 1d:** Radiography of pelvis showing calcinosis masses on the left collum femoris and near the symphis pubis.

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.[7] 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 chanel blockers, warfarin, biphosphonates, aluminium hydroxide, minocylin and surgical excision was reported as case reports and case series.[8,9] A standardised treatment approach is lacking. She has taken low dose corticosteroid and acetylsalicylic acid, calcium chanel 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.


### *Source of Finance*

*During this study, no financial or spiritual support was received neither from any pharmaceutical company that has a direct connection with the research subject, nor from a company that provides or produces medical instruments and materials which may negatively affect the evaluation process of this study.*


### *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.*

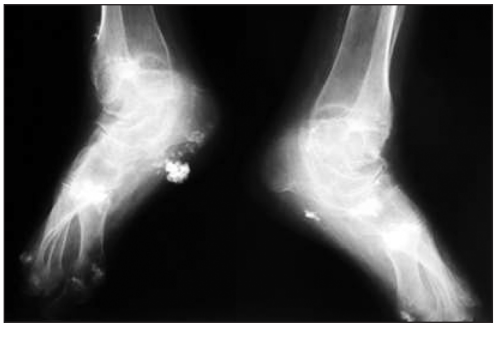

**FIGURE 1e:** Bilaterally calcinosis of feet fingers and footpad.

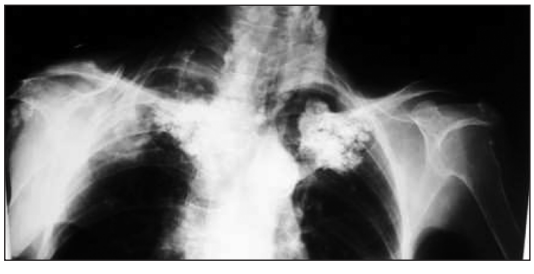

**FIGURE 1f:** Radiography of chest showing multiple sites of calcinosis, bilaterally near the sternoclavicular and costa-chondral junctions.

## 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-Domínquez MP, García-Collinot G, Saavedra MA, Medina G, Carranza-Muleiro RA, Vera-Lastra OI, 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. Koutaissoff 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]