Consequences of Intensive Ipad Use on Calcinosis Outcome in Systemic Sclerosis: A Case Report

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Abstract

We here report the case of a 55-year-old woman with a 13-year history of diffuse cutaneous systemic sclerosis who experienced an acute inflammatory flare of a calcinosis located over the first right metacarpo-phalangeal joint as a consequence of an excessive iPad use.

INTRODUCTION

Systemic sclerosis (SSc) is a rare systemic autoimmune disease characterized by fibrosis of the skin and internal organs and vascular hyperreactivity and remodeling [1]. Calcinosis cutis, a disorder characterized by calcium deposition in skin and subcutaneous tissues, occurs in approximately 22% of patients with SSc and is associated with an increased morbidity [2]. It is often painful and may cause recurrent episodes of local inflammation or infection, leading to considerable distress and disability [3]. In SSc, the mechanisms of calcinosis formation and/or resolution have not been clearly identified yet [2]. We here report the case of a 55-year-old woman with a 13-year history of diffuse cutaneous SSc (dcSSc) who experienced an acute inflammatory flare of a calcinosis located over the first right metacarpo-phalangeal (MCP) joint following excessive iPad use.

CASE PRESENTATION

A 55-year-old right-handed woman presented on January 2014 to the emergency room for pain and swelling of the first right MCP joint (Figure 1A). Her past medical history included dcSSc diagnosed in 2001, which caused extensive skin thickening, severe Raynaud’s phenomenon, telangiectasia, gastroparesis, interstitial lung disease, pitting scars, and multiple calcinosis lesions responsible for repeated digital ulcerations. Her medical treatment included prednisone (5 mg per day), bosentan (125 mg twice daily), methotrexate (15 mg per week), calcium channel blockers, lansoprazole and erythromycin. The patient described a sudden onset of pain followed by a progressive swelling of the first right MCP joint, which started three days ago (Figure 1B). She denied any recent trauma but acknowledged having repetitively mobilized her right thumb on the day before as she used an iPad for taking pictures at her son’s birthday. Physical exam revealed an inflammatory localized edema over the first MCP joint. Active and passive mobility were limited due to local tenderness. Physical examination was otherwise unremarkable. X-rays of

Figure 1 Clinical and radiological evolution of calcinosis-associated arthritis of the first metacarpo-phalangeal joint due to excessive iPad use. Figures A and B show the patient’s hand at the time of presentation (A) and three weeks after treatment onset (B). Figures C and D show X-Rays of the patient’s hand at time of presentation (C) and three weeks (D) after treatment onset.

the right hand showed a heterogeneous and demineralized calcification of the first MCP joint measuring 14x6 mm, which had increased and changed when compared to a previous X-ray which showed a homogenous ovoid dense calcification measuring 11x5 mm (Figure 1C). Ultrasonography examination showed an infiltrative diffuse thickening of the sub-cutaneous tissue without evidence for arthritis or synovitis. Laboratory studies revealed increased leukocyte (10,540/mm³) and neutrophil (9,240/mm³) counts; an increased C-reactive protein (CRP) level (66.8 mg/L) and an increased fibrinogen level (4.98 g/L). Procalcitonin level was normal and blood cultures were negative.

The patient was started on colchicine 1 mg per day. Evolution was favorable with relief of pain and inflammation, decrease of CRP level over three days, leading to patient’s discharge. The radiological evolution is illustrated in Figure 1D. Three weeks later, calcinosis cutis spontaneously fistulized. The discharge was cultured and turned out to be sterile.

**DISCUSSION**

We here report the case of a 55-year-old lady with a 13-year history of dcSSc who experienced an acute aseptic inflammatory flare and subsequent digestion of a calcinosis of the first right MCP joint as a consequence of excessive iPad use.

Calcinosis cutis occurs in 10 to 40% of SSc patients [2]. Calcinosis are responsible for pain, cosmetic disfigurement, ulceration, and mechanical compromise when localized close to joints. Other complications include limitation of functional capacity, nervous compression, skin ulceration and infection [3]. Herein, the outcome of calcinosis was remarkable since the patient first developed local aseptic inflammatory flare and then calcinosis digestion and fistulization.

Pathophysiological mechanisms of calcinosis cutis are poorly understood and comprised chronic tissue hypoxia secondary to vasculopathy and/or microtraumatisms [2]. Decreased tissue perfusion leads to the activation of inflammatory cells such as macrophages and to the secretion of inflammatory mediators that increase calcium production. Herein the excessive use of iPad caused hypermobility of the right thumb and maximized microtraumatisms. Consequently, it led to an exaggerated activation of macrophages, which caused the calcinosis flare. Hypothetically, it is possible that resolution of inflammation led to a change of macrophage phenotype, which caused the disruption of the calcinosis.

Indeed Villa-Bellosta et al. highlighted that M2 macrophages inhibit calcium-phosphate deposition whereas M1 macrophages had no anti-calcium effect [4].

Thus, this case report questions the role of hypoxia and microtraumatism on the phenotypes and functions of macrophages in the context of SSc-calcinosis.

This case reports emphasizes that calcinosis flare can mimic articular manifestations of SSc [5] when localized close to joints. Several other conditions may be associated with MCP joint inflammation: fracture of the metacarpal head, tendon lacerations and tendinitis, arthritis including crystalline arthritis, infectious arthritis, or an inflammatory flare-up of a preexisting osteoarthritis Therefore, in a SSc-patient with hand calcinosis, differential diagnose of an acute inflammatory joint should include aseptic inflammation of the calcinosis.

Finally, this case report highlights that practitioners in charge of SSc patients should be aware of iPad excessive use as an unusual etiology for calcinosis-associated arthritis of the first MCP joint.

**REFERENCES**