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Occupational Acroosteolysis in a Guitar Player

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A case of occupational acroosteolysis in a 24-year-old classical guitar player is reported. Nail tenderness was the only manifestation of initial acroosteolysis, which was due to mechanical stress on the fingers. Radiographs showed initial resorption of the 2nd, 3rd and 4th finger of the left hand. The authors review the clinical and radiological features of acroosteolysis. The pathogenesis of acroosteolysis is discussed as well as the different diseases that may cause destructive changes of the distal phalangeal bones. ***Key words: Radiological changes; Bony phalanx anomalies; Finger tenderness.***

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On the subject of nail abnormalities related to anomalies in the bony phalanges we have shown that some nail disorders may be "bone territory" dependent (1). Among these bone anomalies, acroosteolysis is of great interest. We describe here a case of occupational acroosteolysis of the left hand in a guitar player.

CASE REPORT

A 24-year-old woman, playing classical guitar occupationally about 5 h daily, sought medical advice because she felt her nails were not responsive while she was playing her instrument. A tenderness had started one year previously and had increased, progressively limiting her daily work. On examination, pressure placed on the nails of the left hand was painful. Contour, surface and colour of the nail plates were normal. General examination was otherwise normal, as were tendineous reflexes. Radiographs showed initial resorption of the distal phalanges of the 2nd, 3rd and 4th finger of the left hand (Fig. 1). Acroosteolysis was clearly limited to the 3 digits which applied pressure on the strings.

DISCUSSION

The term acroosteolysis denotes the occurrence of destructive changes of the distal phalangeal bone. The cutaneous signs of acroosteolysis range from bulbous fingertips with soft tissue thickening associated with pseudoclubbing to severe destruction of the digits and metacarpal or metatarsal bones (2). Shortening of the distal phalanges causes the nails to appear abnormally broad (acquired racket-nails). Koilonychia may be observed. Pincer nail deformity has occurred after traumatic acroosteolysis. In severe cases the nail unit can be destroyed.

Deformation and destruction of the digits are commonly accompanied by trophic changes in soft tissues and ulcerations (3, 4).

Functional symptoms such as acroparesthesia, dull pain or vasospastic changes of the digits can be early manifestations of acroosteolysis. In familial acroosteolysis, pain is a conspicuous symptom. On radiographic examination, two varieties of acroosteolysis, which may occur together or independently, may be seen: transverse acroosteolysis and longitudinal acroosteolysis (5, 6). In transverse acroosteolysis the distal phalangeal shaft shows a transverse lytic band, while the tuft and base are preserved. Fragmentation of the separated distal tuft can occur with near total loss of the tuft, i.e. radionecrosis. In longitudinal acroosteolysis, terminal resorption of the distal end of the phalanx progressively results in a "licked candystick" appearance of phalangeal, metacarpal or metatarsal bones. The transverse radiological pattern is characteristic for vinyl chloride disease, renal osteodystrophy, idiopathic non-familial acroosteolysis and familial acroosteolysis. In longitudinal acroosteolysis, which may be observed in scleroderma, hyperparathyroidism, psoriasis, neurological disorders and frostbite, cystic changes and irregularity of the distal tufts can be followed by severe bone resorption, resulting in penicilling

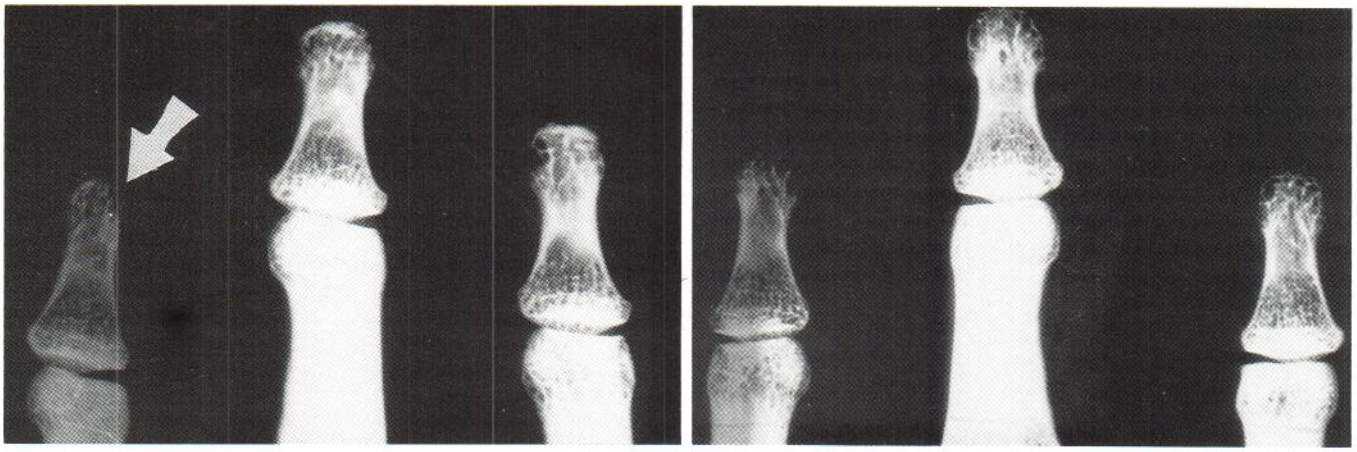

Fig. 1. (Left A – Right B) Comparative X-rays of the hands showing initial resorption of the distal phalanges of the 2nd, 3rd and 4th left finger. Note penicilling of the 2nd finger.

Table I. *Causes of acroosteolysis*

Acrodermatitis continua Hallopeau	
Acromegaly	
Adjuvant	
Bureau-Barriere's disease	
Burger's disease	
Carpal tunnel syndrome	
Collagen disease	Mixed connective-tissue disease
	Polymyositis
	Scleroderma
	Rheumatoid arthritis
	Sjögren's syndrome
Congenital insensitivity to pain syndrome	
Diabetic neuropathy	
Enlers-Danlos syndrome	
Epidermolysis bullosa	
Gout	
Hyperparathyroidism	
Ichthyosiform erythroderma	
Infections	
Juvenile hyalin fibromatosis	
Leprosy	
Metastases	
Mucopolysaccharidoses	
Multicentric reticulohistiocytosis	
Neoplasms	
Nutritional deficiencies	
Pachydermoperiostosis	
Physical injuries	Burns
	Frostbite
	Fulguration
	Mechanical stress (guitar players)
Pycnodysostosis	
Porphyria	
Psoriatic arthritis	
Progeria	
Raynaud's disease	
Reiter's disease	
Renal osteo-dystrophy	
Rothmund's syndrome	
Sarcoidosis	
Self mutilationa after spinal cord injury	
Sezary syndrome	
Spine tumors	
Syringomyelia	
Syphilis	
Tabes dorsalis	
Thevenard's disease	
Vascular diseases	Ainhum
	Atherosclerosis
	Burger's disease
Van Bogaert-Hazay syndrome	
Vinylchloride-disease (8)	
Werner's syndrome	

of the phalanges. Progressive destruction of the bone produces peg-shaped phalanges. Acroosteolysis can be idiopathic (familial or non-familial) or it can occur in association with a number of metabolic, neuropathic and collagen disorders (Table I).

The pathogenesis of acroosteolysis is still unknown. The occurrence of acroosteolysis after thermal or biomechanical injuries as well as in association with vascular or neurological disorders supports the view that different noxious events can induce the development of this condition. Vascular occlusion possibly plays a major role in the development of bone destruction. The hypothesis that vascular occlusion represents the common pathogenetic event for all the different varieties of acroosteolysis has been put forward (6, 7).

In our case, nail tenderness was the only manifestation of initial acroosteolysis due to mechanical stress on the guitar-playing fingers. Two cases with more advanced changes have been described in the radiological literature (9–10).

Our report underlines the importance of a radiological study for the early diagnosis of acroosteolysis. Prompt diagnosis of this condition can in fact prevent further bone resorption, and in some cases improvement can be seen in the symptoms as well as in the roentgenological findings.

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