

Acral osteolysis in bilateral carpal tunnel syndrome

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ABSTRACT

Carpal tunnel syndrome is a common neurological condition with rare yet potentially serious cutaneous and skeletal complications. We present a case of mutilating/ulcerating bilateral carpal tunnel syndrome in a 63 year old female. Radiographs showed symmetrical acral osteolysis in the index and middle fingers distal phalanges bilaterally. Carpal tunnel decompressions provided symptomatic relief.

CASE REPORT

A 63-year old right-handed housewife presented with a three-year history of progressively worsening nocturnal pain, tingling and pins and needles in both her hands. She was a non-smoker with an insignificant past medical and drug history.

Examination of the hands revealed swollen index and middle fingers bilaterally, with dystrophic nails. The tips of the middle fingers had brownish foci of impending ulceration. There was markedly reduced sensation in the median nerve distribution in both hands, with thenar atrophy.

Haematological indices including full blood count, ESR, CRP were normal, as were biochemical markers like liver and renal function tests, serum glucose, calcium and parathyroid hormone. Rheumatoid factor, ANA, anti-ds DNA and anti-centromere antibody assays returned negative.

The provisional diagnosis of bilateral carpal tunnel syndrome was confirmed on electromyography. Radiographs showed symmetrical acral osteolysis of the index and middle fingers distal phalanges. She underwent simultaneous bilateral carpal tunnel decompression, which provided relief from her symptoms. She was discharged from follow up three months after surgery. There was no residual sensorimotor deficit in the median nerve territories bilaterally. The affected fingers were also less swollen than before, with less girth and near normalization of the finger tips. No follow-up radiograph was obtained.

DISCUSSION

Carpal tunnel syndrome is the commonest compressive neuropathy in the upper limb. Bouvier first described the mutilating and ulcerating variety of this clinicopathological entity (1). It is a spectrum of dystrophic-cum-destructive changes in the skin, nails and finally, the bones. The manifold cutaneous changes include skin atrophy, anhidrosis, erythema, oedema, bullae, sclerodactyly and indolent ulcerations of both the fingertips and the subungual regions (2, 3). The nails may show onychodystrophy, brownish coloration and hyperkeratotic cuticles. Bony involvement occurs in severer cases.

The tips of the distal phalanges are non-articular and bear rough, crescentic palmar tuberosities. These give attachment to the pulps of the finger tips (4). Acral osteolysis typically starts with bony resorption in these tufts. Both mechanical compression of the autonomic fibres of the median nerve (5), and impaired distal vascularisation are implicated (6, 7). Indeed, Leger et al have demonstrated vasospasm in the corresponding area by arteriography (8).

Surgical decompression is the definitive treatment for this severe form of carpal tunnel syndrome. Skin and nail changes can show considerable improvement after carpal tunnel decompression (9, 10), however the osteolysis is irreversible, as demonstrated by Natale et al (7). We have found no evidence supporting the use of bisphosphonates for this purpose.

TEACHING POINT

Acral osteolysis is an alarming radiological sign that signifies progressive destruction in the mutilating/ulcerating variety of carpal tunnel syndrome. Surgery provides symptomatic relief, and reverses cutaneous signs, but the bony resorption is reportedly irreversible.

ABBREVIATIONS

ESR: erythrocyte sedimentation rate
 CRP: c-reactive protein
 ANA: antinuclear antibodies
 Anti-ds DNA: anti-double stranded deoxyribonucleic acid

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FIGURES



Figure 1: Top: AP view of both hands, showing osseous resorption in the distal phalanges of the index and middle fingers of both sides. These were consistent with compression neuropathy in the median nerve distribution bilaterally. Bottom: Magnified view of the left hand showing osseous resorption in the distal phalanges of the index and middle fingers.

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