

Florid Reactive Periostitis of the Ulna and Radius: A Case Report

요골과 척골에 발생한 개화성 반응성 골막염: 증례 보고 1예

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Florid reactive periostitis is a benign periosteal reaction that rarely occurs in the long bones of the forearm. A 43-year-old woman presented with a case of florid reactive periostitis, which affects the distal ulna and radius. Computed tomography and plain radiography showed smooth, uniformed periosteal reaction along the interosseous margins of the distal ulna and radius, without underlying bony cortical erosion or destruction. Magnetic resonance imaging also revealed diffuse edema and enhancement in the subperiosteal area and the adjacent soft tissues.

Index terms

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INTRODUCTION

Florid reactive periostitis is a rare benign lesion and is accompanied by aggressive periosteal reaction associated with soft tissue swelling, which usually occurs in the tubular bones of the hands and feet (1).

It is rare in the long bones, and to the best of our knowledge, there are only four cases of florid reactive periostitis affecting the long bone that have been reported in the English literature to date (2-5).

Clinical and radiological findings of florid reactive periostitis may be confused with those of neoplastic and infectious diseases, such as osteogenic sarcoma (1-3).

We report a case of florid reactive periostitis affecting the ulna and radius of the forearm. We describe the radiological findings of this disease and discuss the relevant literature review as well.

CASE REPORT

A 43-year-old woman presented with progressive swelling

and pain on her right distal forearm. There was no history of trauma, previous infection, or constitutional symptoms.

Initial physical examination showed a diffuse swelling and tenderness on the ulnar side dorsal aspect of the forearm and decreased ranges of motion of the wrist due to pain.

Plain radiographs showed a mild, uniformed periosteal reaction along the interosseous margins of the distal ulna and radius (Fig. 1A). A linear radiolucency was found between the underlying bony cortex and periosteal lesion. However, there was no bony destruction or erosion in the underlying bony cortex.

Subsequent computed tomography (CT) showed findings that were similar to radiographic findings: a smoothly lobulated periosteal calcified lesion that was raised from the inner bony cortex in both sides of the radius and ulna, mainly along the interosseous margins (Fig. 1B, C). The outer periosteal calcified lesion had smooth, well defined margins, and the inner cortex was not interrupted or eroded. Additionally, soft tissue swelling was found in the area between the radius and ulna.

Magnetic resonance imaging of the affected area revealed a smooth cortical thickening with slight periosteal elevation and

there was a T2 high signal intensity in the subperiosteal area and adjacent soft tissues, which is consistent with edema (Fig. 1D, E). The subperiosteal area and adjacent soft tissues were well augmented on gadolinium-enhanced T1-weighted images and these findings suggested an inflammatory condition (Fig. 1F).

An excisional biopsy of the lesion was performed, and the histology showed irregular islands of woven bone with many osteoblasts surrounded by a hypercellular spindle cell stroma without pleomorphism or cellular atypia (Fig. 1G).

The diagnosis of florid reactive periostitis was made on the basis of these findings.

DISCUSSION

Florid reactive periostitis is a rare benign juxtacortical soft-tissue lesion, characterized by aggressive periosteal reaction

and benign soft-tissue inflammation.

This lesion has been referred to in the literature by a confusing variety of names. In 1981, Spjut and Dorfman (1) first used the term florid reactive periostitis to describe an aggressive periosteal reaction associated with soft tissue swelling in the hands and feet phalanges of twelve patients.

The age of patients with this disease ranged between 5 and 70 years, with peak incidences during the second and third decades of life, and the lesions occurring more frequently in the women than men (1, 6).

In most of the reported cases, the tubular bones of the hands and feet were most affected. In order of frequency, the most common location was the proximal phalanx, followed by the middle phalanx, and the metacarpal of the hand (7).

However, it rarely occurred in the long bone. To the best of our knowledge, there were only four cases reported with the

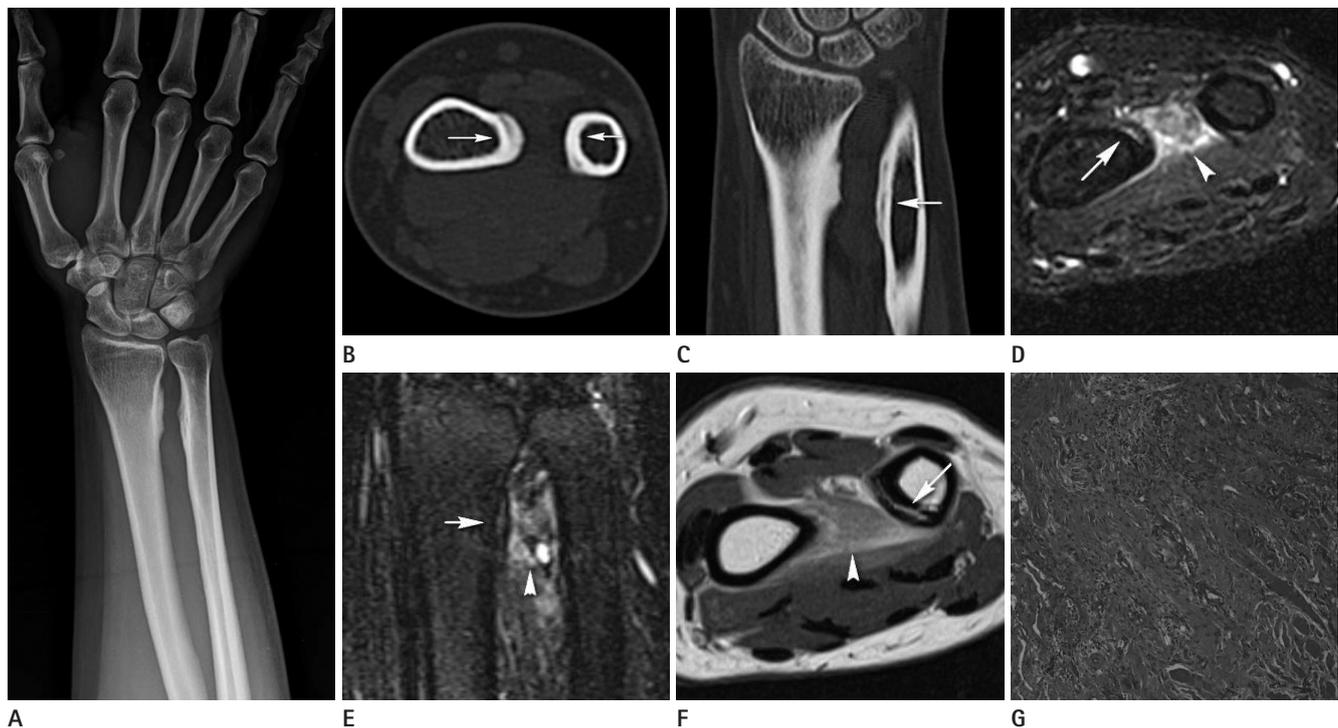


Fig. 1. A 43-year-old woman with florid reactive periostitis involving radius and ulna.

- A.** Posteroanterior radiograph of the right wrist shows a slight and smooth periosteal reaction along the interosseous margins of the distal ulna and radius.
- B, C.** Axial (**B**) and reformatted coronal (**C**) CT show smoothly lobulated periosteal reaction that is elevated from the inner bony cortex on both sides of the radius and ulna. Note the intact inner bony cortex (arrow).
- D, E.** Fat-suppressed T2-weighted axial (**D**) and coronal (**E**) MR images show cortical thickening with slight periosteal elevation and high signal intensity in the subperiosteal area (arrow) and adjacent soft tissues (arrowhead), consistent with edema.
- F.** The axial contrast-enhanced T1-weighted image shows a mild enhancement in the subperiosteal area (arrow) and the adjacent soft tissue between the radius and ulna (arrowhead).
- G.** Photomicrograph of histopathological specimen shows fibrous tissue with hypercellular spindle cell proliferation with trabeculae of woven bone formation (H&E stain, x 100).

condition arising in the long bone, including the distal femur, tibia, ulna, and radius (2-5).

The clinical presentation of florid reactive periostitis is variable pain, swelling, and skin erythema overlying the affected site, lasting weeks to months. Patients usually have a long history of recognizing nodular lesions in the area. The symptoms are exacerbated by frequent using or weight bearing movements on the affected bone, and can be improved by rest, NSAIDs, and corticosteroids.

The cause of florid reactive periostitis is unknown, but about one-half of the patients with this lesion have a history of trauma to the area (1, 6).

Histologically, the lesion is characterized by reactive proliferation of fibroblasts and osteoblasts, accompanied by new bone formation. Thus, it is composed of a mixture of osteoid, bone, cartilage, and fibrous tissue in varying proportions. Unlike the malignant lesions, it lacks cellular pleomorphism and atypical mitotic figures (4).

Plain radiographs show a somewhat solid and smooth periosteal reaction attached to the cortex and is almost always accompanied by localized soft tissue swelling. After several days and weeks, the follow-up study showed rapid progression of the periosteal bone production with an intact cortex. It was probably the most striking clue in making this diagnosis (8). Although many authors reported an intact underlying bony cortex, some cases described the cortex to be eroded on plain radiography (2, 9).

Few CT studies have been conducted on florid reactive periostitis in the literature, but its features on plain radiography such as superior contrast resolution and better delineation of the lesion are more evident in CT. It showed the somewhat aggressive periosteal reaction with slight periosteal raising and adjacent soft tissue swelling, sometimes with varying degrees of mineralization in the soft tissue. In most of the reported cases, the lesions were confined to the external cortex without involvement of internal cortex.

The MR imaging appearance of a florid reactive periostitis has also been described in a few reports (3-5). A superior soft-tissue and bone marrow contrast resolution of MRI allowed an excellent demarcation and better assessment of the lesion. On MRI, the appearance was much more aggressive than CT and plain radiography appearance, which showed diffuse periosteal

soft tissue edema associated with cortical thickening and periosteal elevation with subperiosteal edema that was enhanced after contrast administration.

Although cortical continuity is a helpful finding in differentiating this lesion from other abnormalities, it mimics other neoplastic and infectious diseases, such as juxtacortical osteogenic sarcoma, bizarre parosteal osteochondromatous proliferation (Nora's lesion), stress fracture, myositis ossificans, and osteomyelitis (4).

In our study, the lesion showed smooth, uniform periosteal reaction along the interosseous margins of the distal ulna and radius and no evidence of underlying bony cortical erosion or destruction was observed on CT or plain radiography. On MRI, the periosteal lesion and the adjacent soft tissue showed enhancement and hyperintensity on T2 weighted images without associated soft tissue mass or cortical disruption. These radiological findings were similar to those described by previous reported case findings and led us to diagnose florid reactive periostitis, although it rarely occurred in the long bone of the forearm.

The usual recommended treatment of florid reactive periostitis is local excision (6), but the possibility of local recurrence and progression of the lesion has been reported (10).

To conclude, florid reactive periostitis is rare, especially in the long bone. It is important for the radiologist to be aware of the diagnosis, and recognizing the radiological features is crucial to avoid misdiagnosis and unnecessary therapy.

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요골과 척골에 발생한 개화성 반응성 골막염: 증례 보고 1예

이광진 · 김용훈 · 황윤준 · 김수영 · 이병훈 · 이지영 · 김유성

개화성 반응성 골막염은 양성의 현저한 골반응으로 전완의 긴 뼈에서의 발생은 매우 드물게 보고가 되어 있다. 저자들은 43세 여자에서 전완의 요골과 척골에서 발생한 개화성 반응성 골막염을 경험하였다. 컴퓨터단층촬영 및 단순촬영에서 전완의 요골과 척골의 골간연을 따라 매끈하고 균일한 골막반응이 관찰되었으며 기저 골피질에 골미란이나 골파괴는 보이지 않았다. 자기공명영상에서는 골막하 부위와 주변의 연부조직에 부종과 조영증강 소견을 보였다.

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