Shoulder Erosions in Renal Osteodystrophy

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Abstract. The radiographic manifestations of renal osteodystrophy may be articular as well as osseous. The latter are well recognized, i.e., subperiosteal and subchondral bony resorption. Recently attention has been directed to the occurrence of an erosive arthritis of the hands and wrists in hyperparathyroidism. The authors present six patients with humeral head erosions, all of whom were on chronic long-term hemodialysis. These intra-articular erosions occurred at the "bare" area of the humeral head and thus represent an erosive arthritis and therefore can be distinguished from the usual sites of subchondral and subperiosteal bony resorption seen in hyperparathyroidism.

Key words: Erosions - Erosive arthritis - Arthritis - Hyperparathyroidism - Renal osteodystrophy.

Although many osseous and articular abnormalities have been described in patients with chronic renal disease, subperiosteal and subchondral bony resorption are the hallmarks of hyperparathyroidism.

An erosive arthritis of the hands and wrists in patients with both primary and secondary hyperparathyroidism has recently been reported by Resnick [5]. We have studied six patients on chronic hemodialysis with secondary hyperparathyroidism, exhibiting shoulder erosions. These cases form the basis for this report.

Case Reports

Case 1

G.L., a 60-year-old black woman with chronic renal failure secondary to hypertensive nephrosclerosis, had been on hemodialysis since

Fig. 1 Case 1. Radiograph of the left shoulder in 1975 reveals two intra-articular erosions of the humeral head. These changes simulate those found in rheumatoid arthritis and tuberculosis. Subchondral resorption of the distal clavicles is present

Fig. 2. Case 2. Small asymptomatic intra-articular erosion adjacent to the greater tuberosity of the right humerus
1972. Medical history revealed prior pulmonary tuberculosis and previous fractures of the wrist and ankle.

The patient presented in 1977 with the acute onset of left shoulder pain. Examination revealed atrophy of the left deltoid muscle, tenderness over the acromion, and a limited range-of-motion primarily on abduction.

Radiographs of the shoulder (Fig. 1) revealed intra-articular erosions of the humeral head with poorly defined borders which were thought to be consistent with a low-grade joint infection such as tuberculosis. Bone scan and joint aspirate were negative as was synovial fluid analysis. The patient was treated symptomatically with indomethacin, with a gradual abatement of symptoms.

Case 2

J.G., an 18-year-old white man, presented in 1968 with acute proliferative glomerulonephritis, which progressed to nephrotic syndrome in 1969. He was started on hemodialysis in 1975 and developed hypertension, secondary to chronic renal failure in 1977.

While on hemodialysis, an erosion of the humeral head was noted (Fig. 2). The patient was asymptomatic and physical examination of the shoulder was normal. In late 1977 he underwent a renal transplant with a living related donor kidney.

Case 3

D.M., a 57-year-old black woman with a long history of chronic renal failure secondary to hypertensive nephrosclerosis has been on hemodialysis since 1974 and developed bone pain in the hips and knees early in 1977.

Laboratory examination included a parathormone level of 3900 units (8x normal) and an alkaline phosphate of 800-900 IU/liter (110 IU/liter normal). From April to September of 1977, progressive changes of bony resorption were demonstrated in the distal clavicles and mid-phalanges. Small intra-articular erosions were noted in the humeral head which were asymptomatic and have remained so to date (Fig. 3).