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Avascular necrosis of the third metacarpal head: A case report

Üçüncü metakarp başının avasküler nekrozu: Olgu sunumu

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Üçüncü metakarp başının avasküler nekrozu nadir görülen bir hastalıktır. Asemptomatik olabileceği gibi, ağrılı olabilir ve yoğun hareket kısıtlılığı da görülebilir. On üç yaşında erkek hastada üçüncü metakarpofalangeal (MCP) eklemde ağrı ve hareket kısıtlılığı vardı. Travma ya da sistemik lupus eritematozus veya steroid kullanımı gibi predispozan bir faktör öyküsü yoktu. Tutulan eklemde hareket genişliği hafif derecede kısıtlıydı. (fleksiyon genişliği 10°-80°). Metakarpofalangeal eklemin dorsal yüzünde palpasyonla hafif hassasiyet vardı. Radyografilerde üçüncü metakarp başında kistik lezyonla birlikte skleroz ve düzleşme saptandı. Non-steroidal anti-enflamatuvar ilaç ve dört hafta süreyle splint uygulamasıyla semptomlar kontrol altına alındı ve MCP eklem hareket genişliği arttı. Tıbbi tedavi ile iyi bir klinik yanıt alındı ve radyografilerde gerileme izlendi.

Anahtar sözcükler: Metakarp/tedavi/radyografi; osteonekroz/tedavi.

Avascular necrosis of the third metacarpal head is a rare entity. It may remain asymptomatic, but may also be painful and lead to restricted range of motion. A-thirteen-year-old male patient presented with a painful and restricted range of motion in the third metacarpophalangeal (MCP) joint. There was no history of any trauma or a predisposing factor such as systemic lupus erythematosus or steroid use. The range of motion of the involved joint was minimally restricted (flexion range, 10 to 80 degrees). Mild tenderness was found on palpation over the dorsal aspect of the third MCP joint. Radiographs showed flattening and sclerosis of the third metacarpal head together with cystic lesions. The symptoms were controlled with non-steroidal anti-inflammatory drugs and splinting for four weeks. The range of motion of the MCP joint increased, along with regression on radiographs.

Key words: Metacarpus/therapy/radiography; osteonecrosis/therapy.

Avascular necrosis of metacarpal head is an extremely rare problem, and there is only a limited number of cases reported in the literature (1, 2, 3, 4). It was first described by Dieterich in 1932 (3, 4).

Case report

A 13-year-old male student suffered from a painful and restricted range of motion in the third metacarpophalangeal (MCP) joint of the right hand is admitted to our clinic. The symptoms had started 3 months before admission without any obvious reason. There was no history of any trauma or predisposing factor such as systemic lupus erythematosus or steroid use.

Clinical examination of the patient revealed no signs of erythema, warmth, or swelling of the hand. An asymmetric osseous prominence of the third metacarpal head was noted. The range of motion of the involved joint was restricted minimally (flexion range from 10º to 80º). Mild tenderness on palpation was present over the dorsal aspect of the third MCP joint. The neurovascular status of the hand was normal. Routine biochemical analysis and rheumatological screening were within normal limits.

Radiographs demonstrated flattening and sclerosis of third metacarpal head with cystic lesions (Figure I). On the technecium scan, a high uptake in

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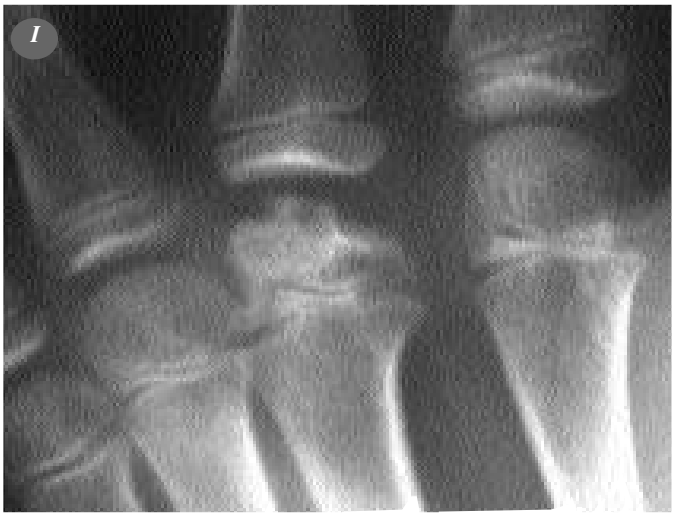


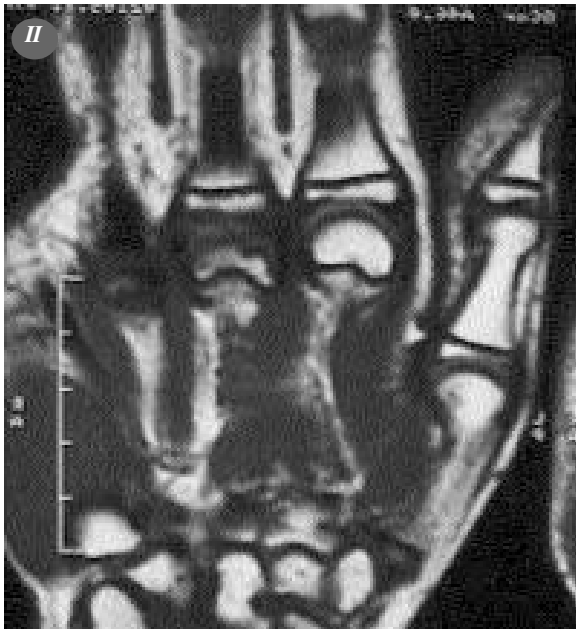


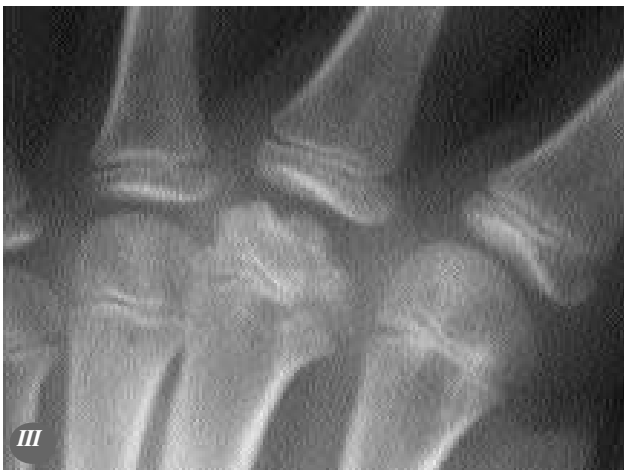
Figure I: Plain radiographs showing flattening of the metacarpal head with cystic lesions and sclerotic changes.
Figure II: MRI of metacarpophalangeal joint.

the MCP joint was seen. MRI demonstrated a low intensity zone on T1-weighted images (Figure II). These signs were suggested avascular necrosis of third metacarpal head showing a healing period. In addition, 3D-CT was demonstrated flattening of metacarpal head with cystic lesions.

Treatment with non-steroidal anti-inflammatory drugs (NSAID) and splinting for four weeks were successful in controlling the symptoms and increased range of motion of MCP joint (flexion range from 0º to 90º). As there was a good clinical response to medical therapy and regression was noted in radiographs no surgical intervention was considered (Figure III, IV). A prominent decrease in the pain, and full recovery of ROM was established 1 year later (Figure V).

Discussion

Avascular necrosis of metacarpal head is an uncommon problem. This condition has been described in association with systemic lupus erythematosus, steroid use, secondary to trauma, and other sites of bone infarction such as Freiberg disease (1, 2, 3, 4). The long metacarpal bone is the most commonly involved (4). The natural history varies from



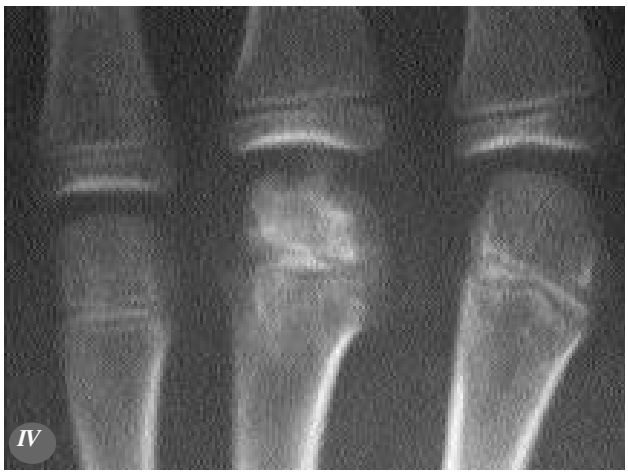


Figure III: Plain radiographs of the metacarpal head after 3 months.
Figure IV : Plain radiographs of the metacarpal head after 6 months. Healing of cystic lesions and decreasing of sclerotic changes. But, slight deformity of the metacarpal head is still present.

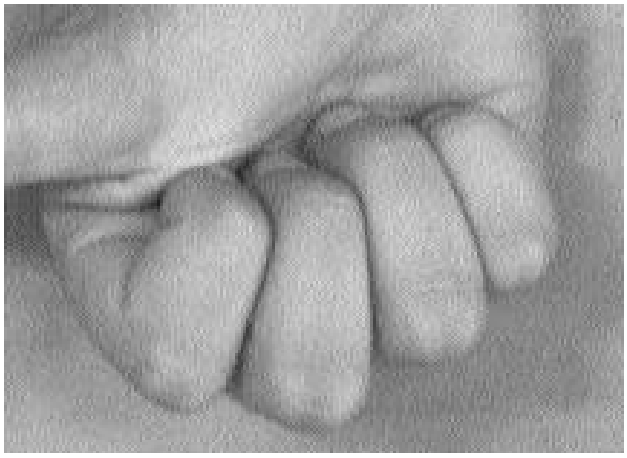


Figure IV : Plain radiographs of the metacarpal head after 6 months. Healing of cystic lesions and decreasing of sclerotic changes. But, slight deformity of the metacarpal head is still present.

remaining totally asymptomatic to progressing painful and restricted range of motion (4).

Wright and Dell have studied the vascularity of metacarpals in ten fresh adult cadaver arms (4). In this study, a main arteriole in the distal epiphysis was absent in 35% of the specimens (4). These metacarpal heads were dependent on the numerous, very small pericapsular circumferential arterioles (4). The long finger metacarpophalangeal joint is the most prominent joint in the hand and may frequently sustain trivial to trauma without patients making note of it (1, 4). Traumatic effusion of the MCP joint may risk the nutrition of the metacarpal head and it may cause avascular necrosis (1, 4).

Age of patients, when seen initially, ranged from 15 to 54 years in the literature (1, 2, 3, 4). This case is the youngest patient reported.

Treatment regimens, range from splinting to metacarpophalangeal joint arthroplasty. Good clinical results were reported by Wada et al by flexion osteotomy of the metacarpal head and by curettage of the necrotic bone and grafting by De Smet (1, 3). Regarding the age of the patient and as he has a good ROM, and there was no significant pain at rest and no surgical intervention was planned. Medical therapy and splinting was applied and follow-up radiographs showed regression of avascular necrosis findings.

As avascular necrosis of metacarpal head is a very rare clinical entity, the treatment of this condition has varied. Successful results were obtained by curettage and grafting or by changing the weight-bearing joint surface by flexion osteotomy. In this case, we preferred a more conservative approach as our patient was young and has minimal symptoms and we obtained a good result. Thus, we suggest treatment with non-steroidal anti-inflammatory drugs and splinting in younger patients with mild symptoms.

Kaynaklar

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