

FAITS CLINIQUES — CASE REPORTS

IDIOPATHIC NECROSIS OF THE CAPITATE

A. ARCALIS ARCE, J. PEDEMONTE JANSANA, J. MASSONS ALBAREDA

Avascular necrosis of the capitate bone in a 38-year-old man is presented. The patient was treated by intercarpal fusion of the capitate, lunate and scaphoid bone to relieve pain.

Keywords : avascular necrosis ; capitate.

Mots-clés : nécrose aseptique ; grand os.

Idiopathic avascular necrosis (AVN) of the capitate is a very rare condition. Although vascularization of the capitate falls into group I of Gelberman (1986), as with scaphoids and 8% of the lunates, there have only been 19 cases reported in the literature in which corticosteroid or traumatic injury has not played a major etiological role (7). The retrograde blood supply of the capitate leaves that bone at risk of developing proximal pole avascular necrosis. The cause of whole bone AVN has not been elucidated. To our knowledge, there are only five cases reported that may be idiopathic (4, 5, 7).

CASE REPORT

A 38-year-old right-handed man who worked as a carpenter was seen at another hospital complaining of a 4-months history of pain and stiffness in his right wrist. He denied any prior history of trauma or other joint symptoms. Radiographs showed a sclerotic area and small cystic changes in the body of the capitate (fig. 1). Magnetic resonance imaging (MRI) showed decreased signal intensity throughout the capitate (fig. 2).

We first saw the patient 7 months after his symptoms had begun. He complained of pain and swelling in the wrist. His range of motion was extension 30°/75°, flexion 35°/80°, radial deviation 15°/30° and ulnar deviation 20°/30°.

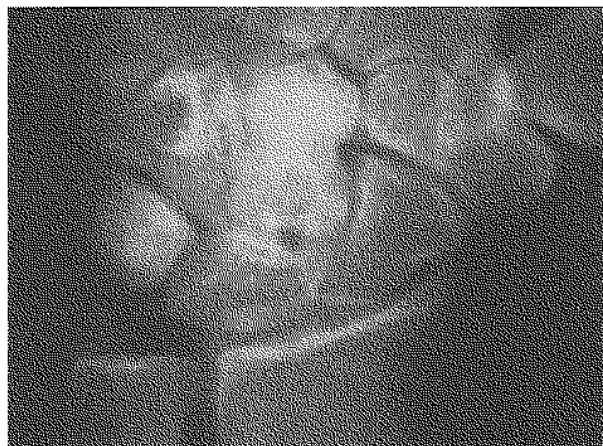


Fig. 1. - Xray film showing a sclerotic area and small cystic changes in the body of the capitate.

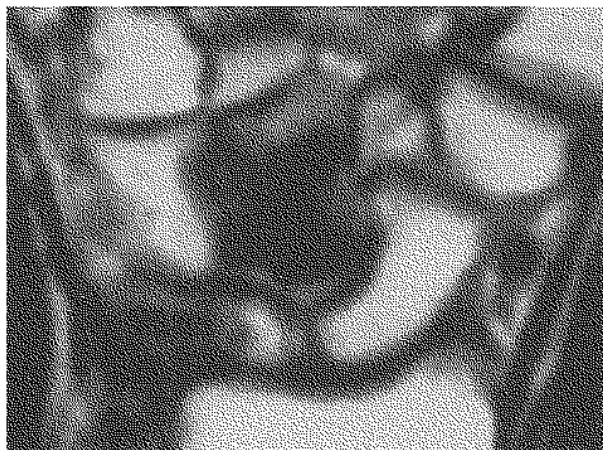


Fig. 2. — Preoperative magnetic resonance image showing the black-hole sign characteristic of avascular necrosis of the capitate bone.

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One month later, we carried out a multiple intercarpal arthrodesis of the capitate, lunate and scaphoid by an anterior approach. Postoperatively, the patient presented dysesthesias in the medial nerve sensory region due to neurapraxia which recovered spontaneously six months later. Two years postoperatively, the patient still complained of some pain when he did heavy work, and his range of motion was extension 20°/75°, flexion 25°/80°, radial deviation 10°/30° and ulnar deviation 10°/30°. Roentgenograms showed trabecular bone formation between capitate, lunate and scaphoid (fig. 3).



Fig. 3. — Xray film two years after capitoscapolunate arthrodesis showing solid fusion.

DISCUSSION

The etiology of idiopathic avascular necrosis of the carpal bones is still unknown. There are some factors of risk for developing this syndrome, including abnormal vascularization (6), ligamentous instability (8, 4), unrecognized fracture or repetitive microtrauma (3). In our case, the patient probably had minor repeated injuries to his wrist in his job as a carpenter.

We agree with Lapinski *et al.* (5) that the management of AVN of the capitate warrants differentiation of proximal pole from whole bone involvement, and that the sensitivity and specificity of MRI can make this distinction. Perhaps this phenomenon is not as rare as has been previously believed and MRI would reveal additional cases.

There are many methods of treatment reported, such as splinting (8), drilling, resection, tendon interposition arthroplasty (4, 5), silicone arthroplasty (1) and arthrodeses (6, 3). We performed an intercarpal fusion in order to replace the necrotic bone by new growth brought about by the phenomenon of creeping substitution of Plemister. Due to the few cases reported of AVN of the capitate, there is no standardization in the method of treatment to use. We believe that intercarpal fusion has been a satisfactory solution in this patient who returned to his previous job.

REFERENCES

1. Bolton-Maggs B. G., Helal B. H., Revell P. A. Bilateral avascular necrosis of the capitate. *J. Bone Joint Surg.*, 1984, 66-B, 557-559.
2. Gelberman R. H., Gross M. S. The vascularity of the wrist. Identification of arterial patterns at risk. *Clin. Orthop.*, 1986, 202, 40-49.
3. James E. T. R., Burke F. D. Vibration disease of the capitate. *J. Hand Surg.*, 1984, 9-B, 169-170.
4. Kimmel R. B., O'Brien E. T. Surgical treatment of avascular necrosis of the proximal pole of the capitate — Case report. *J. Hand Surg.*, 1982, 7, 284-286.
5. Lapinsky A. S., Mack G. R. Avascular necrosis of the capitate: A case report. *J. Hand Surg.*, 1992, 6, 1090-1092.
6. Lowry W. E., Cord S. A. Traumatic avascular necrosis of the capitate bone: case report. *J. Hand Surg.*, 1981, 6, 245-248.
7. Milliez P. Y., Kihl K. H. A. H., Thomine J. M. Ostéonécrose aseptique essentielle du grand os. Revue de la littérature à propos de 3 nouveaux cas. *Int. Orthop.*, 1991, 15, 85-94.
8. Newman J. H., Watt I. Avascular necrosis of the capitate and dorsal dorsi-flexion instability. *Hand*, 1980, 12, 176-178.

SAMENVATTING

A. ARCALIS ARCE, J. PEDEMONTE JANSANA, J. MASSONS ALVAREDA. *Avasculaire idiopatische necrose van het capitatum.*

De auteurs rapporteren een geval van avasculaire necrose van het capitatum bij een 38-jarige man. Behandeling met intracarpale arthrodes tussen capitatum, lunatum en naviculare ter verlichting van de symptomen.

RÉSUMÉ

A. ARCALIS ARCE, J. PEDEMONTE JANSANA, J. MASSONS ALVAREDA. Nécrose idiopathique du grand os.

Les auteurs rapportent l'observation d'une nécrose avasculaire idiopathique du grand os chez un homme

âgé de 38 ans. Le patient a subi une arthrodèse intracarpienne intéressant le grand os, le semi-lunaire et le scaphoïde dans le but de soulager ses symptômes.