

RAPIDLY PROGRESSIVE DESTRUCTION OF THE HIP CASE REPORT AND REVIEW OF THE LITERATURE

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A case of total destruction of the femoral head over a period of eight weeks is described. The diagnosis of avascular necrosis was made on the pathological examination. In the literature, four mechanisms of rapid destruction of the femoral head are mentioned.

Keywords: avascular necrosis; rapidly progressive destruction of the femoral head.

Mots-clés: nécrose avasculaire, destruction rapide et progressive de la tête fémorale.

CASE REPORT

A 72-year-old woman developed painful restriction of the mobility of her right hip during the month of October 1991. Radiographs on October 8, 1991 showed mild osteoarthritis of the hip (fig. 1). Conservative measures were taken. On December 18, 1991 the patient was admitted because of deterioration in her general condition and considerable disabling complaints regarding the right hip. Radiographs on December 19, 1991 showed advanced destruction of the femoral head (fig. 2). Based on this, septic arthritis was suspected and aspiration of the right hip was performed, which was negative. Hemocultures were also negative. On January 3, 1992 the patient was transferred to the intensive care unit in shock of unknown origin. She complained mainly of abdominal pain. There was no fever. Laboratory analyzes showed hematocrit 15.1%, hemoglobin 5.0 g/dl, red blood cells $3.3 \times 10^6/l$, white blood cells $8 \times 10^3/l$, erythrocyte sedimentation rate 22 mm/h, CRP < 0.5 mg/dl. After an extensive investigation the diagnosis of a ruptured aneurysm of the splenic artery, causing hemodynamic shock,

was made. Splenectomy was performed. The patient made a smooth recovery; however she still complained of severe pain in her right hip. All hemodynamic parameters normalized. Consequently on January 27, 1992 a cemented total hip arthroplasty was performed. Intraoperatively total destruction of the femoral head was noted. The acetabulum showed degenerative cartilage changes, not in proportion to the destruction of the femoral head. Cultures and microscopic evaluation of the synovial fluid obtained during the operation were negative. The pathological diagnosis was avascular necrosis. There was no evidence of osteomyelitis. The postoperative history was uncomplicated.

DISCUSSION

Two problems existed with this patient: one was hemodynamic shock due to a ruptured aneurysm of the splenic arteries, the other was very rapid destruction of the right femoral head. The complete destruction of the head occurred over a period of eight weeks. The literature identifies four major causes of rapidly progressive destruction of the femoral head.

Rapidly progressive osteoarthritis of the hip generally takes six to 18 months to develop and accounts for about 5% of cases of osteoarthritis of the hip (1, 2, 3). A primary form develops in-

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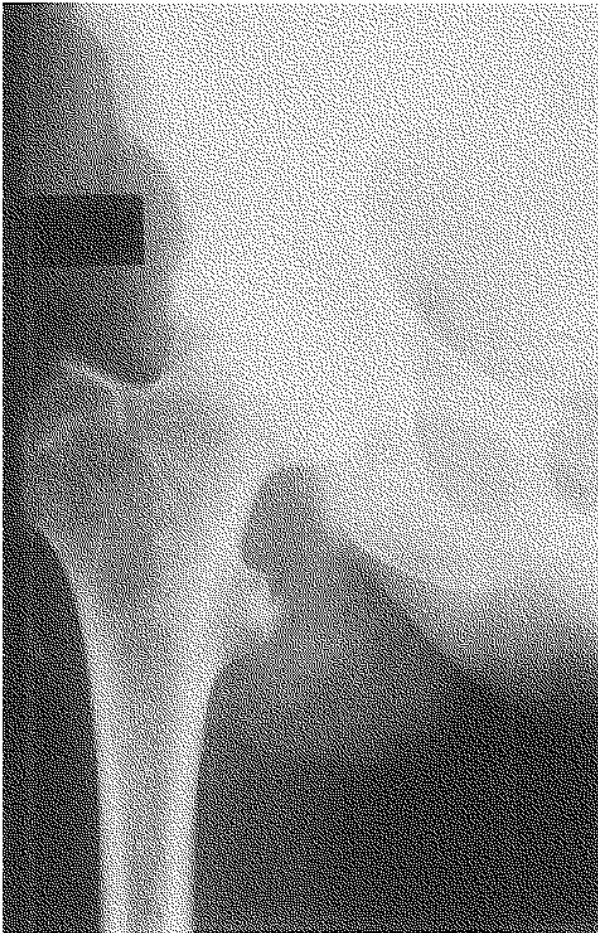


Fig. 1. — Radiograph taken on October 8, 1991.

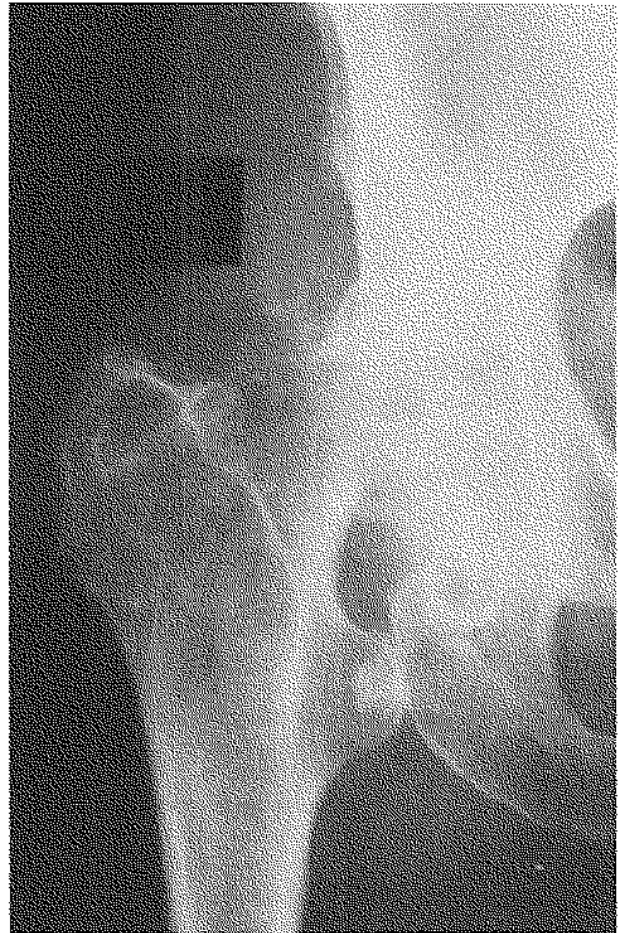


Fig. 2. — Radiograph taken on December 19, 1991.

dependent of previous hip pathology ; a secondary form is an accelerated evolution of existing osteoarthritis. Typical for this type is bone destruction with little or no sclerosis or formation of osteophytes. Generally there is involvement of the acetabulum. Pathologically there is chondrolysis, later followed by subchondral osteolysis with no bone necrosis or synovial inflammation (1).

A second mechanism results from inflammatory or rheumatological causes, which are generally found in the younger population. These cases seldom develop very rapidly and are often polyarticular. Rapid destruction of the hip joint by chondrocalcinosis is described (3). There is a significant association between chondrocalcinosis and rapidly progressive osteoarthritis (4). Chondro-

calcinosis can be identified by radiological examination and by the presence of calcium pyrophosphate dihydrate crystals in the synovial fluid. Histologic examination seldom contributes to the diagnosis (3, 4).

A third type comes from infectious causes. Clinical characteristics are an ill condition of the patient, fever, painful restriction of the hip mobility, swelling and possibly redness. There are clear infectious parameters. The diagnosis is confirmed by a positive culture of the synovial fluid and, possibly, a positive hemoculture. These hips are subject to very rapid chondrolysis.

Finally there is the mechanism resulting from avascular necrosis of the femoral head. The pathological characteristic of this type is massive

osteonecrosis of the femoral head, the chondrolysis being secondary (3). This pathology is frequently seen in younger adults (5), and exists in a traumatic and a nontraumatic form. The nontraumatic form results from medication (corticosteroids, NSAID's, etc.), alcohol, sickle cell anemia or from an idiopathic origin. In 20% of the cases the collapse of the femoral head develops within one year (5).

Apart from these four major types there are other rare causes of rapid destruction: neuroarthropathy, hemophilia, chronic hemodialysis, villonodular synovitis, amyloidosis (3).

CONCLUSION

Striking in this case report is the very rapid destruction of the femoral head, faster than in classical cases of rapidly progressive osteoarthritis (1, 2) or avascular necrosis (5). Bacteriological examinations of the synovial fluid and of a sample obtained at the time of surgery were negative. Microscopic examination of the synovial fluid did not contribute to the diagnosis. The pathological examination indicated avascular necrosis. There were no histological arguments for osteoarthritis or inflammatory causes.

Based on the pathological examination the diagnosis of idiopathic avascular necrosis of the femoral head was made. In the literature no similar cases of destruction over a period of eight weeks could be found.

There were no arguments for an underlying disease such as vasculitis which could have caused on the one hand degeneration of the wall of the splenic artery and on the other hand thrombosis of the vessels of the femoral head, causing avascular necrosis.

REFERENCES

1. Della Torre P., Picuti G., Di Filippo P. Rapidly progressive osteoarthritis of the hip. *Ital. J. Orthop. Traumatol.*, 1987, 13, 187-200.
2. Depuyt F., Van Holsbeeck M. Rapidly destructive coxarthrosis: case study and review of the literature. *J. Belge Radiol.*, 1990, 73, 207-10.
3. Gerster J. C. Les arthropathies destructives. *Rev. Rhum. Mal. Ostéoartic.*, 1990, 57, 143-90.
4. Menkes C. J., Decraemere W., Postel M., Forest M. Chondrocalcinosis and rapid destruction of the hip. *J. Rheumatol.*, 1985, 12, 130-33.
5. Ohzono K., Saito M., Takaoka K., Ono K., Saito S., Nishina T., Kadowaki T. Natural history of nontraumatic avascular necrosis of the femoral head. *J. Bone Joint Surg.*, 1991, 73-B, 68-72.

SAMENVATTING

D. PUYLAERT, R. NUYTS, M. RAMAEL, J. VERSTREKEN. Snel progressieve destructie van de femurkop. Case report en overzicht van de literatuur.

Een volledige destructie van de femurkop over een periode van acht weken wordt beschreven. De diagnose van avasculaire necrose wordt weerhouden op basis van het anatomopathologisch onderzoek. In de literatuur vindt men vier groepen van snelle destructie van de femurknop.

RÉSUMÉ

D. PUYLAERT, R. NUYTS, M. RAMAEL, J. VERSTREKEN. Destruction rapide et progressive de la tête fémorale. Description d'un cas et revue de la littérature.

Une destruction complète de la tête fémorale en huit semaines, est rapportée. Le diagnostic de nécrose avasculaire fut retenu sur base de l'examen anatomo-pathologique. Dans la littérature on trouve quatre groupes de destructions rapides de la tête fémorale.