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CASE REPORT

Metastasis from renal cell carcinoma presenting as osteolysis in total hip arthroplasty : A case report

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We report a case of a pelvic metastasis from a renal carcinoma in association with a total hip arthroplasty. Mistakenly diagnosing such lesion as a granulomatous osteolytic foreign body reaction due to polyethylene debris may lead to devastating and uncontrollable haemorrhage during revision arthroplasty.

Keywords : hip arthroplasty ; metastasis ; renal cell carcinoma.

CASE REPORT

In 1995, at the age of 63, a female patient underwent total hip arthroplasty (THA) (cemented Exeter stem, Stryker Orthopaedics™, cementless Morscher cup, Zimmer Inc™) on her right hip because of rheumatoid arthritis. After ten years of uneventful follow-up the patient developed stress related pain over the buttock and trochanteric area. Clinical examination in February 2006 revealed a moderate limp and local tenderness over the above mentioned area. Plain radiographs, even in retrospect review, did not show any signs of loosening or osteolysis.

A trochanteric bursitis and abductor tear was suspected and two local infiltrations were administered with a long acting steroid.

Three months later the pain had increased to such a point that the patient was unable to walk without crutches and was mainly wheelchair bound. At this point there still was no pain during the night. A repeat AP pelvis and lateral hip radiograph now showed an irregular area of osteolysis proximal to the cup. Technetium-99 MDP bone scintigraphy revealed an increased tracer uptake proximal to the acetabulum, extending up to the right anterior inferior iliac spine. Computed axial tomography (CAT) uncovered a widespread osteolytic lesion involving the right hemipelvis with medial and lateral cortical breakthrough (fig 1).

A positron emission tomography (PET) scan showed increased uptake over the right acetabulum and the lower pole of the right kidney. Several small lesions were also discovered in the lungs. After staging (pT3N0M1), total right nephrectomy was carried out. Histological examination identified the tumour as a Clear Cell Renal Carcinoma.

Angiography of the iliac vessels showed a highly vascularised metastasis in the right acetabulum with rapid venous outflow through veins originating from the internal iliac and superior gluteal vein (fig 2). Selective embolisation of the feeding

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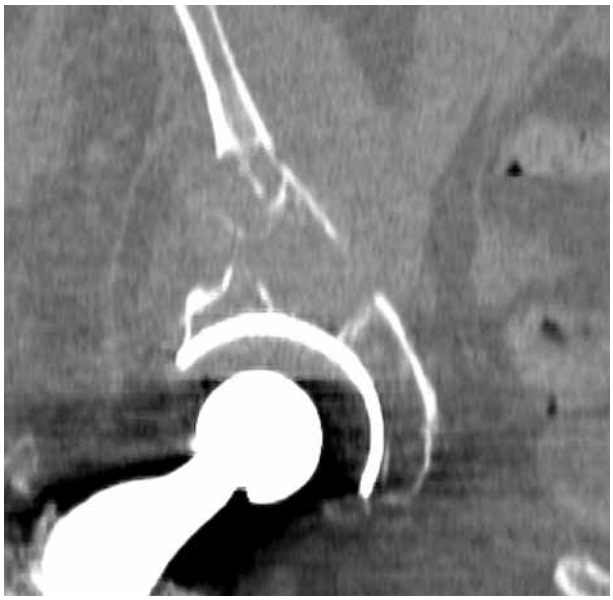

Fig. 1. — CAT scan showing a large osteolytic lesion with perforation of lateral and medial iliac cortex.

Fig. 2. — Angiography showing a highly vascularised metastasis proximal to the cementless cup.

arteries interrupted the blood flow to the lesion. Following embolisation, curettage of the tumoral tissue was done through an anterior iliac incision. The apical part of the cup was exposed. There was still a remarkable ingrowth of the remaining bone in the cup, holding remnants of the anterior and posterior column together. Since the cup contributed to pelvic stability it was left untouched. Five long semi-threaded screws were inserted in a retrograde manner into the iliac wing followed by filling of the empty space with bone cement. An acetabular reconstruction reinforced with polymethylmethacrylate (PMMA) was thus created, incorporating the distally protruding screws *(3)* (fig 3). The patient then received adjuvant radiotherapy to the pelvis. Rehabilitation after the operation progressed slowly. She could only walk for a few months with a frame and deceased six months later due to disseminated lung metastasis.

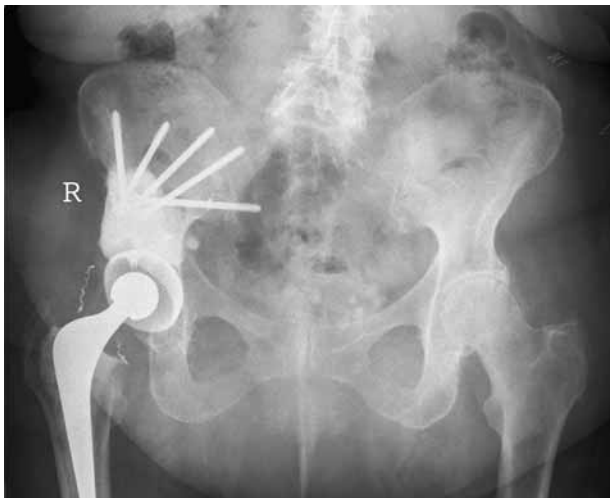

Fig. 3. — Postoperative AP radiograph of the pelvis : Screw-bone cement composite filling the defect. Embolisation coils are noticeable.

DISCUSSION

Most hip surgeons deal with a substantial number of revisions. This unconsciously leads to a tendency to only differentiate between septic and aseptic osteolytic lesions. If a diagnostic workup including blood samples, scintigraphy and preoperative joint aspiration does not indicate any signs of infection, loosening is likely to be attributed to particle disease and automatically classified as aseptic loosening. The likelihood of becoming mislead is even greater if asymmetrical cup wear is present as

in our case. In addition, when systemic disease or inflammatory arthritis are present, inflammatory markers such as CRP and ESR are frequently elevated and are not readily helpful to exclude infection or other causes of osteolysis.

Rapidly developing osteolytic lesions, osteolytic lesions with an atypical presentation or an unusual extension, should alert the surgeon and warrant further investigation. Metastases of various origins including breast, kidney, prostate, thyroid, as well as myeloma frequently spread into the pelvis. Nearly fifty per cent of renal cell carcinomas are diagnosed only after first discovering their metastases (*2*). A metastasis may coincide with a THA placed in the past. A combination of a renal cell carcinoma and THA has previously been reported (*1,4*).

Considering the high number of THA's performed even at young age, and the ageing of the population, the incidence of this concurrence is likely to increase in the future. There is a serious risk that some of these tumours, mimicking aseptic osteolytic granulomatous foreign body lesions, may be very vascular e.g. myeloma, kidney and thyroid metastases. In such cases it is advisable to perform selective arterial embolisation preoperatively (*5,6*).

Revision of the cup in our case, or even a biopsy without having established the diagnosis might have led to massive and uncontrollable bleeding.

In summary, although the combination of metastatic bone disease and THA is rare, it must be considered in the differential diagnosis of osteolysis, especially when osteolysis is rapidly progressing or unusually expanding. Severe and even life threatening bleeding may be avoided by cautiously planning revision arthroplasty or reinforcement surgery in such cases.

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