Findings that shed new light on the possible pathogenesis of a disease or an adverse effect

Pseudoacetabulum a subtle radiological feature of a chronic dislocated total hip replacement

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Summary

We report the presence of an unusual radiological feature of formation of pseudoacetabulum in a chronically dislocated and asymptomatic total hip arthroplasty. An elderly demented patient with a history of recurrent dislocations presented to us after an unwitnessed fall and leg length discrepancy. Radiographs showed a dislocated hip arthroplasty with a well-defined, concentric, radio-opaque shadow around the dislocated femoral head suggestive of a pseudoacetabulum. Previous radiographs revealed formation of heterotopic ossification in the soft tissues surrounding the hip. The dislocated joint was reduced under a general anaesthetic with difficulty. This case highlights the presence of heterotopic ossification and formation of pseudoacetabulum as subtle radiological features of chronic instability and dislocation.

BACKGROUND

Total hip arthroplasty (THA) is a highly successful surgical treatment of osteoarthritis of the hip.¹ However, it also entails potential risks of infection, thromboembolism and dislocation. The incidence and risk of a dislocation after total hip dislocation are highest during the early postoperative period.^{1–3} However, it can also manifest many years after the index procedure.^{1–3} Acute hip dislocation can be diagnosed easily with a preceding history of a traumatic event or other precipitating factor followed by pain and inability to weight bear on the affected side. Chronic asymptomatic dislocation although reported in the literature can be difficult to diagnose particularly in an elderly demented patient.⁴

We report an unusual case of chronically dislocated and asymptomatic THA with unique radiological signs of formation of a 'pseudoacetabulum' around the dislocated femoral head.

CASE PRESENTATION

An elderly woman resident of nursing home suffering from senile dementia presented to our department with a history of an unwitnessed fall and pain, bruising, soft tissue swelling around the left hip and difficulty in mobilisation. The patient was reported to be mobilising well with the help of a 'Zimmer' frame prior to this presentation. Clinical examination revealed a shortened, rotated leg and radiographs confirmed a dislocated joint.

Previous patient's records suggested that the patient had undergone a complex primary left THA 14 years ago. This was secondary to a failed uncemented hemiarthroplasty (Austin-Moore) for a displaced intracapsular fracture neck of femur. The THA was noted to have dislocated three times over previous 4 years with the last recorded episode being 3 years ago. At each presentation,

the joint was reduced under a general anaesthetic. As the patient was relatively asymptomatic after the last reduction and considering the advanced age and associated comorbidities, a decision of not to undertake a major revision surgery was taken.

INVESTIGATIONS

A review of previous radiographs taken 3 years ago revealed a radio-opaque shadow, suggestive of heterotopic ossification in the soft tissues surrounding the hip arthroplasty (figure 1).

The radiographs taken at the most recent admission revealed a well-defined, rounded, concentric, radio-opaque shadow around the dislocated femoral head (figure 2). This was noted to be highly congruent with the dislocated femoral head suggesting a pseudoacetabulum.

TREATMENT

The hip was reduced in the operating theatre with difficulty and by a reasonable amount of traction under a general anaesthetic. Given the difficulty of reduction and presence of unusual radiological sign we believed that the hip was probably dislocated for some time and yet still allowing the patient to mobilise. The patient was encouraged to mobilise carefully after the reduction and was discharged to the nursing home.

OUTCOME AND FOLLOW-UP

The patient subsequently died due to unrelated medical reasons and was not reported to have any more dislocations until then.

DISCUSSION

The incidence of late dislocation of the prosthetic hip joint has been variously reported between 0.4% and 4% in

Figure 1 Figure showing heterotopic ossification around the dislocated femoral head.

the literature.^{1–3} Several factors have been implicated like polyethylene wear,⁵ loosening or impingement of the components,^{3, 6} previous surgery,³ progressive muscular weakness⁶ inflammatory arthropathy⁷ and patient-related factors like confusion, dementia, psychosis,⁸ etc. In majority of the cases the diagnosis is obvious with a typical history at the time of presentation, which is further confirmed by clinical and radiological examination. However, patients with Alzheimer's disease or cognitive impairment may not present a typical history. In such cases it may become very difficult to confirm the diagnosis of dislocation and the duration of preceding symptoms, particularly

Figure 2 Figure showing a radio-opaque shadow suggesting formation of a neo-acetabulum.

Figure 3 Postreduction radiographs showing signs of pseudoacetabulum.

if the patient is relatively asymptomatic and mobilising. Careful review of the radiographs may reveal subtle signs suggestive of chronic instability (figure 3).

In the above-mentioned case previous radiographs clearly showed the presence of a radio-opaque shadow around the femoral head (figure 1) with features suggestive of heterotopic ossification. Its occurrence could be accounted for by the instability and subsequent chronic subluxation/dislocation of the femoral head. We can also conclude that this gradually progressed to formation of a well-defined, circumferential, congruent pseudoacetabulum over a period of 3 years. It is very likely that the patient had been mobilising with a dislocated hip joint without significant discomfort. The presence of pain and difficulty in mobilisation secondary to the fall during the current admission could be accounted by the accompanying soft tissue injury.

To date only one such case report has been published in the literature so far. This report highlights the importance of subtle indirect radiological features suggestive of chronic hip instability and obvious signs of a chronically dislocated hip, which will make the clinician aware while treating such patients.

Learning points

- ▶ The importance of subtle radiological signs of heterotopic ossification in the soft tissues around hip arthroplasty could suggest chronic hip instability.
- ▶ The presence of pseudoacetabulum around a chronically dislocated femoral head suggests a chronically dislocated hip arthroplasty.
- ▶ A chronically dislocated hip arthroplasty could be asymptomatic and the patient could even mobilise.

Competing interests None.

Patient consent Obtained.

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