Hip and knee pain in a child

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A 9-year-old girl presents with pain in the hip and knee associated with a limp. How should she be investigated?

Case presentation

A 9-year-old girl presented with a three-month history of pain in the hip and knee associated with a limp. Examination revealed restricted movement of the hip, particularly internal rotation and adduction in flexion. The Trendelenburg sign was positive.

Initial x-rays were normal, apart from a slight increase in medial joint space (Figure 1). Three months later, x-rays revealed Perthes' disease – that is, flattening and sclerosis of the femoral head.

A femoral osteotomy was performed to bring the femoral head under the acetabulum to protect the epiphysis while healing occurred (Figure 2). At skeletal maturity, the patient has a near-normal hip, with signs of old Perthes' disease visible on x-ray (Figure 3).

Discussion

Perthes' disease is a form of avascular necrosis of the upper femoral epiphysis. It presents in boys more commonly than in girls, and generally in patients aged between 4 and 10 years. Differential diagnoses include transient synovitis, infection, and (in older children) slipped upper capital femoral epiphysis. The diagnosis can be confirmed on a bone scan or MRI scan.

The femoral head is vulnerable to deformity while revascularisation occurs, and the aim of treatment is to keep the epiphysis contained within the acetabulum by bracing or surgery (femoral or pelvic osteotomy). Younger children are more likely to be treated with either observation or bracing; older patients are more likely to have surgical intervention.

Perthes' disease takes 18 to 24 months to heal and the general prognosis is good, but the risk of osteoarthritis is higher in the fourth and fifth decades. The outcome is related to the age of onset, stiffness, extent of femoral head involvement and the sex of the patient (females have a more guarded prognosis, possibly due to less potential for remodelling). Children who present before the age of 8 years tend to have a better prognosis than older children.

Figure 1. Initial x-ray showing a slight increase in medial joint space of the left hip.

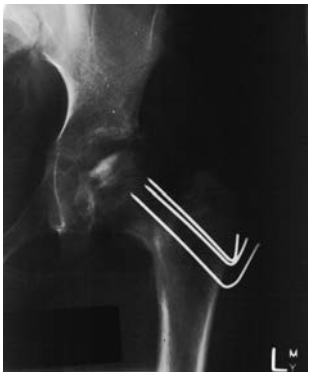

Figure 2. The patient underwent an osteotomy designed to internally rotate, abduct and extend the femoral head underneath the acetabulum.

Figure 3. Four years after surgery, the hip is nearly normal. Signs of old Perthes' disease include a short femoral neck (coxa breva) and large femoral head (coxa magna).

Key points

- Other than a subtle increase in joint space, initial x-rays in Perthes' disease are often normal.
- Patients under the age of 8 years have a more favourable prognosis.
- Surgery to prevent long term deformity can be helpful in older children who have involvement of the whole femoral head. MT

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