CASE REPORT

A not to be missed cause in a child with atraumatic limp

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Abstract

Children with musculoskeletal symptoms are commonly seen by general practitioners (GPs). Those that present with atraumatic limp pose a particular diagnostic challenge. Although uncommon, Perthes disease (PD) is an important cause of atraumatic limp in children and may result in debilitating consequences if missed. We put forward a case of delayed diagnosis of PD in a child, thus highlighting the need for a greater index of suspicion among GPs in approaching any child with a limp.

Introduction

PD refers to an idiopathic osteonecrosis of the femoral capital epiphysis due to vascular compromise.[1,2] The exact etiology remains elusive, but it is generally agreed that genetic factors confer susceptibility to the disruption of the blood supply to the capital femoral epiphysis, while environmental factors, such as repeated subclinical trauma resulting from hyperactivity or mechanical overload, trigger the disease.[2] Although the reported annual incidence varies widely (0.2 to 19.1 per 100,000 children below age 15)[3], the disease mostly affects children aged 2 to 12 and is more common among boys.[4] Despite the lack of uniformity in treatment, an earlier diagnosis of PD generally translates into a better outcome.[2]

Case Report

A nine-year-old boy was brought by his mother to the outpatient primary care clinic with complaints of intermittent limping for more than a year associated with occasional mild pain over the left hip area. The child had had multiple visits to GPs and treated consistently for musculoskeletal pain with oral analgesics. He had no history of imaging prior to the current visit. Despite the temporary relief brought about by symptomatic treatment, the symptoms occasionally became severe enough for the child to miss school. There was no history of significant trauma, joint swelling, or systemic symptoms. His medical history was insignificant except for an excision of a thyroglossal cyst three years ago.

Clinical examination revealed a thriving child who was afebrile and walked with a limp. There was mild tenderness over the anterior left hip and a noticeable restriction in range of motion over the left hip involving both abduction (max: 30˚) and internal rotation (max: 30˚). Bryant triangle measurement showed left supratrochanteric shortening of approximately 1 cm. A pelvic x-ray was performed, and the collapse of superior aspect of the left femoral head with fragmentation and an irregular articular margin was noted (**Figure 1**). A diagnosis of PD was made, and the child was referred to a pediatric orthopedist. The current plans are for a varus osteotomy with possible acetabuloplasty.

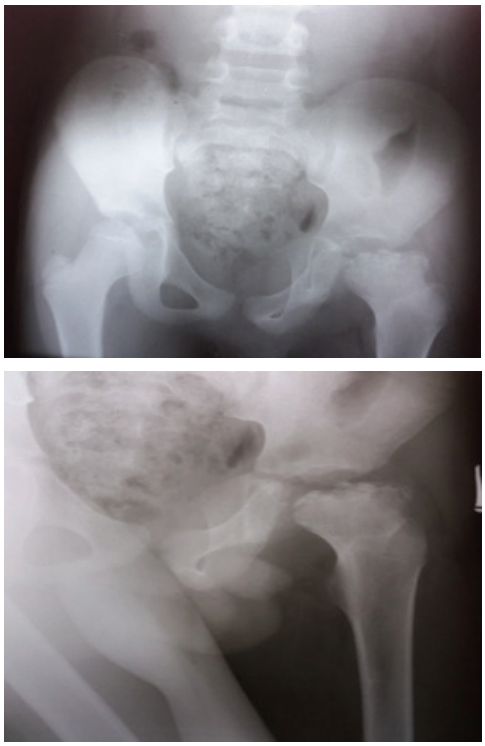

Figure 1: Pelvic x-ray with an anteroposterior view.

Discussion

One of the leading reasons for pediatric visits to GPs is musculoskeletal-related symptoms.[1] Among these complaints, the evaluation of a child with a limp can be particularly challenging,[4,5] especially since GPs have been shown to have low confidence in performing musculoskeletal examinations of children.[6]

When approaching the diagnosis of a limping child, it is imperative for clinicians to consider the primary differentials (see **Table 1**) to avoid missing potentially serious causes. Exclusion of emergent conditions, namely, non-accidental injuries and septic arthritis, is of utmost importance.[5,7] A systematic history-taking should encompass clarifying the duration of the limp and its possible association with a traumatic event.[4,5] The presence of acute systemic features is a red flag that may suggest septic arthritis.[5] A focused examination of the affected joints should be performed to elicit focal signs, such as an abnormal appearance, skin changes, range of motion, and the presence of effusion and tenderness, in addition to a thorough neuromuscular examination of the affected limb.[4,5] Laboratory workups, such as a full blood count, erythrocyte sedimentation rate, C-reactive protein, and a blood culture, may be required in suspected septic arthritis, osteomyelitis, or neoplasms.[4,5,8] Simple imaging involving plain radiographs of the joint in the standard anteroposterior and lateral views are useful for assessing fractures, bone injuries, osteomyelitis changes, neoplasms, and developmental conditions, while ultrasound may help to elucidate joint effusions.[4,5]

Table 1: Common causes of a limp in children by age (9)

Age group (years)	Primary differential diagnoses
0-3	Septic arthritis or osteomyelitis Developmental hip dysplasia Fracture or soft tissue injury (toddler's fractures or non-accidental injury)
3-10	Transient synovitis or irritable hip Septic arthritis or osteomyelitis Perthes disease Fracture or soft tissue injury (stress fracture)
10-15	Slipped upper femoral epiphysis Septic arthritis or osteomyelitis Perthes disease Fracture or soft tissue injury (stress fracture)

In this case, the insidious atraumatic limp and ensuing infrequent mild hip pain reflect a classical presentation of PD.[10] The range of motion of the hip in PD is usually already restricted at the time of diagnosis,[11] such as in this case. PD also presents mostly unilaterally, although up to 15% of patients may have bilateral PD.[1] Its insidious onset and a clinical course marked by remission and exacerbation tend to cloud the diagnosis of PD.[5]

Although it is not uncommon for symptoms to be present for months prior to diagnosis,[10] a higher index of suspicion may have helped to establish the definitive diagnosis of PD earlier for this child. Early identification is particularly important, as a prompt intervention confers a better outcome.[2] An important caveat to be remembered is that the initial phase of PD may mimic benign synovitis of the hip; as such, any child suspected or treated for irritable hip should be reassessed for a symptom resolution to exclude PD.[9,12]

A plain anteroposterior radiography of the pelvis is usually sufficient for the diagnosis of PD.[2,9,12] Classic radiographic features include sclerosis, fragmentation, and eventual flattening of the proximal femoral epiphysis.[9] As initial radiographs may be normal in early Perthes, repeat imaging may be warranted should the symptoms persist and be suggestive of PD.[1,5,9,12] Even with a good epidemiological and symptomatological fit, a delay in diagnosis can still occur in the absence of a high index of suspicion, as evidently illustrated by this case.

A delayed diagnosis may result in a greater extent of bone destruction and may affect whether a child is treated with conservative containment or surgical correction, with the latter favored for older children with more advanced disease.[2] Considering the unpredictable outcomes of treatment,[4,5] a timely diagnosis is critical in order to prevent later sequelae such as early secondary osteoarthritis, femoroacetabular impingement, and leg-length discrepancies.[10]

Conclusion

Despite being an uncommon cause of atraumatic limp, PD is a serious condition with potential long-term sequelae. An awareness of its insidious presentation coupled with a higher index of suspicion and judicious use of simple radiography are prerequisites for timely diagnosis.

Conflict of interest

The authors declare that there are no conflicts of interest.

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Contribution of authors

Woi Hon Boo diagnosed and treated the patient. Ping Yein Lee conceived the study. Both participated in the interpretation and drafted the manuscript.

How does this paper make a difference to general practice?

- Underlines the need for GPs to maintain a high index of suspicion for PD in evaluating any child with a limp, especially when it comes to performing imaging to rule out PD.
- Highlights the importance of a timely diagnosis of PD, particularly among older children, to avoid increased morbidities.

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