JOURNAL OF CLINICAL AND HEALTH SCIENCES

CASE REPORT

A Boy with Limping Pain: A Diagnosis Not To Be Missed

Radhiana Hassan[1], Nurjasmine Aida Jamani[2*] Ardilla Hanim Abd Razak[3]

1 Department of Radiology, Kulliyyah of Medicine, International Islamic University Malaysia
2 Department of Family Medicine, Kulliyyah of Medicine, International Islamic University Malaysia
3 Department of Orthopedics, Traumatology and Rehabilitation, Kulliyyah of Medicine, International Islamic University Malaysia

Received
27th April 2021
Received in revised form
18th June 2021
Accepted
21st June 2021
Published
1st March 2023

Corresponding author:
Nurjasmine Aida Jamani,
Department of Family Medicine,
Kulliyyah of Medicine,
International Islamic University
Malaysia, Jalan Sultan Ahmad Shah,
25200 Kuantan, Pahang,
Malaysia.
Email: minaida@iium.edu.my

ABSTRACT

Post traumatic limp in children and adolescent is one of the common reasons seen in primary care. However, making the correct diagnosis is not always easy for primary care physicians. This is because the signs are not specific and the radiological image may appear very subtle to the untrained eyes. Most of the time the causes are not serious and involves soft tissue injury, but at times an important condition could be missed in an inexperienced physician. This paper presents the case of a 16-year-old boy with Slipped Capital Femoral Epiphysis (SCFE) which was overlooked. This case highlights the importance of recognizing the signs of SCFE to allow for early referrals for proper management and prevent its possible complications.

KEYWORDS: limping, Slipped Capital Femoral Epiphysis (SCFE), adolescent, diagnosis, missed

INTRODUCTION

Limping after a traumatic fall in children and young adolescent can sometimes pose a challenge in diagnosis in primary care. In most children, limping is usually caused by a mild and self -limiting event like muscle strain, contusion and sprain. However, a limping gait can be a serious or life- threatening condition. Delay in diagnosis can subsequently delay referral and treatment which in turn may result in significant morbidity [1].

There are various etiologies for a child presented with limping gait and pain. This includes bone condition such as osteoblastoma, septic arthritis, soft tissue injury, developmental dysplasia of the hip and child abuse to name a few [2]. The onset, age at presentation, nature of the pain and restricted range of motion often will give some ideas on what is actually going on.

One of the conditions that should not be missed in a limping child is Slipped capital femoral epiphysis (SCFE) which may be aggravated by trauma even though rare [2]. Recognition of this condition is important since timely referral and treatment is crucial. Thus, detailed history, physical examination and appropriate laboratory investigations including imaging should be made. We report a case of a limping boy with atypical presentation with Left SCFE and the importance of early recognition in order to prevent delay in diagnosis and treatment.

CASE PRESENTATION

A 16-year- old boy presented to the emergency department with left hip pain and difficulty to walk after alleged fall in the bathroom in the morning. He has no known medical illness. Previously, he had been having mild left hip pain for seven months following a fall he had while playing football at school. He had multiple visits to the general practitioner with radiography done but no fracture was elicited. He was given regular

analgesic for his pain. Despite analgesic, he was still in pain and started to limp. However, there was no referral made for further evaluation. He was able to walk but could not be active in sport since then. He had no other complaints.

On examination, he was alert with normal vital signs. He is able to bear weight on the affected side. His weight is 53 kg and stood at 160 cm making his body mass index 20.7 kg/m^2. He had antalgic gait and the lower limb attitude was in external rotation. There was no obvious shortening noted on standing. Lower limb examination showed left leg was externally rotated with 1cm shortening compared to the right lower limb. Obligatory external rotation or Drehmann sign was positive. There was tenderness over the anterior and posterior of left hip with intact neurovascular examination. His hip range of movement was reduced, in particular the internal rotation of the hip. Other systemic examinations were unremarkable.

Radiography of the hip joints showed lateral displacement of left proximal metaphysis with widening and irregularity of the physis with positive Trethowan's sign which is consistent of Slipped Capital Femoral Epiphysis (Figure 1). A lateral view or frog leg view was attempted but failed as the patient was in pain. Futhermore, previous radiographs for comparison were not able to be traced from the multiple health clinic visits due to poor record keeping.

Subsequently, he underwent in situ pinning of the left hip where a threaded cannulated screw was placed across the physis. Postoperatively, he was well with no complication. A month after surgery, he was not in pain and ambulating well with axillary crutches. At the 1 -year follow-up, he could walk without any difficulty and pain. The range of motion of the left hip recovered fully and he was able to play sports. Radiograph showed no signs of avascular necrosis or chrondrolysis of the epiphysis (Figure 2).

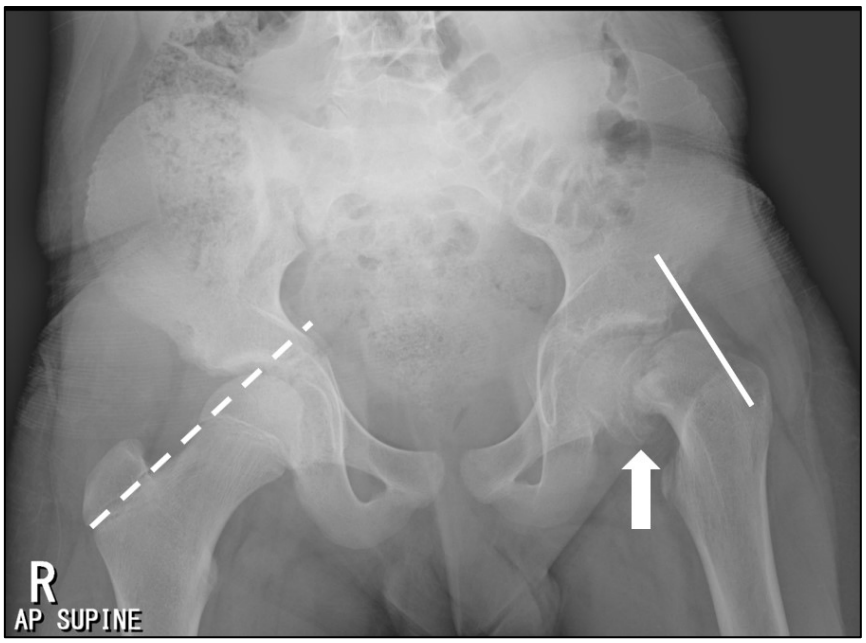

Figure 1 Hip radiography showing posteromedial slippage of the left femoral epiphysis. There is posteromedial slippage of the left femoral epiphysis (white arrow). The Klein's line which is a line drawn through the lateral aspect of the left femoral neck does not bisect the femoral epiphysis (also called Tretowan's sign). Compare with normal finding on right side (dotted line).

Vol 8(1) (2023) 93-97 | jchs-medicine.uitm.edu.my | eISSN 0127-984X
https://doi.org/10.24191/jchs.v8i1.21454

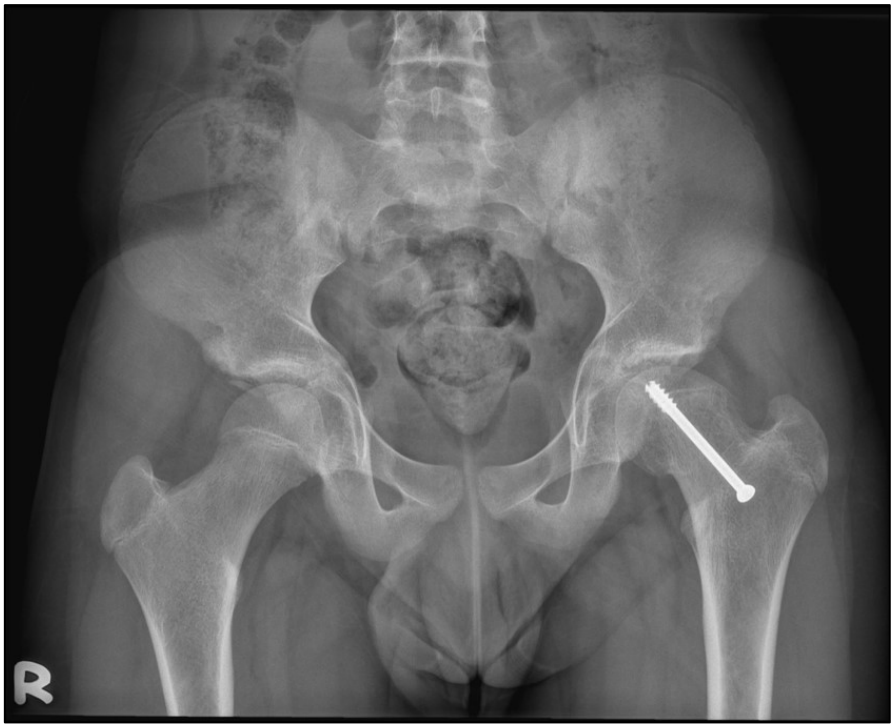

Figure 2 Hip radiograph post-surgical intervention. Good reduction of previously seen displaced femoral head with screw fixation.

DISCUSSION

SCFE is a hip disorder that commonly happens in child-growing age between the age of 8 to 15 years old [1]. It results in posterior and inferior displacement of the proximal femoral epiphysis on the metaphysis which happens through the growth plate [2].

The prevalence of SCFE is estimated to be around 10 over 100,000 children and is more prevalent in boys [3]. SCFE is usually unilateral but can happen bilaterally in 18% to 50% of patients [4]. The etiology of SCFE is unknown, however it is thought to be multifactorial. This may include obesity, growth spurts or endocrine causes [5].

Children with obesity have been associated with SCFE. In America, more than 50% of patients with SCFE are obese (over 95th percentile for weight for their age) [5] while a study done by Lim et al in Singapore found that 76.6% of their SCFE patient were obese [6]. Even though obesity has been a well- known association with SCFE, atypical presentation of SCFE in normal or low body mass index children can also occur like in this case [5]. In a retrospective study done by Obana et al [7] found 13% of their patients who suffered from SCFE had normal weight. Thus, this could explain the possible delayed diagnosis in this case as he presented with symptoms much earlier.

Nonetheless, atypical SCFE tends to happen in children aged younger than 10 years old or older than 16 years old accompanied with endocrinopathy, radiation therapy or renal osteodystrophy [5]. Thus, further evaluation is needed if these children in the said age presented with insidious unexplained hip, thigh, or knee pain.

Most children with SCFE present typically with limping and poorly localized pain at the hip, thigh or even knee which could be acute (pain less than 3 weeks), chronic (more than 3 weeks) or acute on chronic [8]. Acute on chronic means that a patient had been having long-standing symptoms with acute worsening of the pain which can be aggravated by a recent trauma such as in this case.

However, pain during the early stages can be subtle and often missed. A thorough physical examination of the hip may help. Patients may have antalgic gait and possible limited internal rotation of the hip which is a tell-tale sign [9]. As in this case, despite

Vol 8(1) (2023) 93-97 | jchs-medicine.uitm.edu.my | eISSN 0127-984X
https://doi.org/10.24191/jchs.v8i1.21454

the patient had been complaining of left hip pain during the earlier encounter, the diagnosis was overlooked till he had a second trauma which worsen his hip.

When dealing with a teenager with limping pain, a list of differentials must be considered in order to prevent missing the important diagnosis. This includes transient synovitis, septic arthritis, Perthe's disease, fracture of the hip or adductor muscle strain [10 – 11].

A plain radiograph of the pelvis can help in confirming diagnosis [2]. AP views are sufficient to diagnose SCFE if it is obvious as in this case (Figure 1). The AP view will be able to show the characteristic anterosuperior migration of the metaphysis relative to the physis and observing the Klien's line. Kline's line is drawn along the superior femoral neck and intersect the lateral border of the epiphysis when there is a slipped, the lines lie at the lateral border or been disrupted as in this case. However, some slipped are at the early stages and may not be easily recognized to the untrained eyes as in this case earlier. Hence, many literatures suggest for a frog-lateral view since slipped are most evident [4].

As in our case, we suspect that there might be early subtle changes of SCFE when he first had hip pain following a fall seven months earlier. However, we were unable to trace the previous radiographs done in the health clinic due to poor record keeping.

Once diagnosis is made, patients should be on non-weight bearing on the affected limb. Surgical intervention is crucial to prevent complication. Surgery for SCFE aims to prevent further epiphysis slippage of the upper femoral physis and decrease the risk of long-term morbidity [1, 5].

Delay in diagnosis may be multifactorial. Non-orthopedic physicians are more prone to miss SCFE during the initial presentation [4]. In a study done by Perry et al [8], about 75% of their patient with SCFE were previously seen by primary care providers with relevant symptoms before the diagnosis was made. Thus, physician should have a high index of suspicions based on the patient's age, history and to proceed to imaging modalities including FL pelvis view [4].

Complication caused by delayed diagnosis can lead to morbidity. Avascular necrosis, chrondrolysis and femoroacetabular impingement are well documented complications [2]. Evidence suggests that increased time to diagnosis worsens the hip deformity and prognosis [8, 12]. It has been reported that patients who presented with thigh and knee pain tend to have delayed diagnosis compared to the one presenting with hip pain [5].

Nevertheless, all of these complications can be prevented if the diagnosis of SCFE in children and adolescent is anticipated. This is because initial medical examination is done by primary care provider or at the emergency department. Hence, it is crucial for primary care doctors to recognize the potential significance of knee or hip pain in children.

CONCLUSION

A definitive diagnosis of SCFE can be difficult especially in atypical presentation of patients. Despite SCFE is uncommon in thin or normal weight children, physician should be aware of the atypical presentation. Complete history, thorough hip examination and ability to delineate abnormality in plain radiographic investigations are important in order for a timely referral and management. Nonetheless, if the symptoms did not improve after the first visit, further evaluation and referral should be made to prevent delay in diagnosis.

Conflict of Interest

Authors declare none.

Funding

This case report is funded by the International Islamic University Malaysia Research Initiative Grant (IRF19-020-0020).

Acknowledgements

We would like to thank the patient and his parents for giving consent to publish this case for academic purposes.

Authors' contribution

NAJ drafted and prepared the manuscript. AHAR evaluated and examined the child and co-managed with RH int terms of radiological input. AHAR performed surgical intervention. RH and AHAR helped in the drafting of the manuscript. All authors read and approved the final manuscript.

REFERENCES

1. Otani T, Kawaguchi Y, Marumo K. Diagnosis and treatment of slipped capital femoral epiphysis: Recent trends to note. J Orthop Sci [Internet]. 2018;23(2):220–8.
2. Peck DM, Voss LM, Voss TT. Slipped Capital Femoral Epiphysis: Diagnosis and Management. Am Fam Physician. 2017;95(12):779–84.
3. Loder RT, Aronsson DD, Weinstein SL, Breur GJ, Ganz R, Leunig M. Slipped capital femoral epiphysis. In: Instr Course Lect. 2008;57:473–98.
4. Samelis PV, Loukas C, Kantanoleon S, Lalos H, Anoua N, Kolovos P, et al. Causes of Delayed Diagnosis of Slipped Capital Femoral Epiphysis: The Importance of the Frog Lateral Pelvis Projection. Cureus. 2020;12(4):6–13.
5. Whyte N, Sullivan C. Slipped capital femoral epiphysis in atypical patients. Pediatr Ann. 2016;45(4):e128–34.
6. Lim YJ, Kagda F, Lam KS, Hui JH, Lim KB, Mahadev A, Lee EH. Demographics and clinical presentation of slipped capital femoral epiphysis in Singapore: comparing the East with the West. J Pediatr Orthop B. 2008;17(6):289–92.
7. Obana KK , Siddiqui AA , Broom AM, Barrett K, Andras LM, Millis MB, Goldstein RY. Slipped Capital Femoral Epiphysis in Children without Obesity. J Pediatr. 2020;218:192–7.
8. Perry DC, Metcalfe D, Costa ML, Van Staa T. A nationwide cohort study of slipped capital femoral epiphysis. Arch Dis Child. 2017;102(12):1132–6.
9. Kotoura Y, Fujiwara Y, Hayashida T, Murakami K, Makio S, Shimizu Y, et al. Valgus Slipped Capital Femoral Epiphysis in Patient with Hypopituitarism. Case Rep Orthop. 2017;2017:1–4.
10. Perry DC, Bruce C. Evaluating the child who presents with an acute limp. BMJ. 2010;(341):c4250.
11. Sawyer JM, Kapoor MM. The Limping Child: A Systematic Approach to Diagnosis - American Family Physician. Am Fam Physician [Internet]. 2009;79(3):215–24. Available from:http://www.aafp.org/afp/2009/0201/p215.
12. Rahme D, Comley A, Foster B, Cundy P. Consequences of diagnostic delays in slipped capital femoral epiphysis. J Pediatr Orthop B. 2006;15:93–7.

Vol 8(1) (2023) 93-97 | jchs-medicine.uitm.edu.my | eISSN 0127-984X
https://doi.org/10.24191/jchs.v8i1.21454