Med & Health Jun 2019; 14(1): 270-274 https://doi.org/10.17576/MH.2019.1401.28

CASE REPORT

Isolated Knee Pain as a Presentation for Proximal Femur Fracture in Paediatrics

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ABSTRAK

Kepatahan tulang femur proksimal bagi pesakit kanak-kanak jarang berlaku dan boleh terlepas pandang, terutamanya apabila sejarah trauma tidak begitu serius dan melibatkan kepatahan tulang patologi. Kami melaporkan sebuah kes tentang seorang kanak-kanak perempuan yang berumur 6 tahun, dibawa ke Jabatan Kecemasan mengadu kesakitan pada lutut kiri selepas jatuh dari ketinggian dua kaki. Pesakit pada mulanya telah dirawat sebagai kecederaan tisu lembut pada lutut kiri setelah mendapati X-ray lutut kiri yang normal. Dia telah diperiksa semula pada hari ketiga di mana keadaannya telah bertambah teruk. X-ray pada bahagian pelvis dan lutut kiri menunjukkan terdapat kepatahan tulang "intertrochanteric" pada femur kiri dengan sista tulang. Kami melaporkan kes ini bagi mengelakkan pengabaian kepatahan tulang femur proksimal di mana trauma kecil menyebabkan sakit lutut yang tidak spesis Kepatahan tulang femur pada kanak-kanak boleh mengakibatkan komplikasi kepada pertumbuhan seperti osteoporosis.

Kata kunci: kanak-kanak, kepatahan tulang pinggul, sista tulang

ABSTRACT

Proximal femur fracture in paediatric patients are very rare and can easily be missed especially when the history of trauma is so trivial, and associated with pathological fracture. We report a case of 6-year-old girl with a history of left knee pain following a fall from a height of 2 feet. She was treated as a soft tissue injury of the left knee as the left knee radiograph was normal. She was reassessed at day 3 of injury with worsening symptoms. Radiograph of the pelvis and left knee revealed a comminuted intertrochanteric fracture of left femur with an underlying bone cyst. We would like to highlight this case report to avoid missing a proximal

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femur fracture where a trivial trauma resulted In the presentation of a non-specific knee pain. Femur fracture in peadiatric age group can result in the significant complication of growth such as osteoporosis.

Keywords: bone cysts, child, hip fractures

INTRODUCTION

Proximal femur fractures in the paediatric patients are very rare accounting for less than 1% of all paediatric fractures. Ninety percent of the fractures were due to significant trauma while ten percent were the results of low energy mechanism (Dial & Lark 2018). Low energy mechanism resulting in this type of fracture were usually pathological fracture (De Mattos et al. 2012). We present a case of proximal femur fracture in a paediatric patient after a trivial trauma which initially presented as referred pain in the knee. We found out that the patient had underlying undiagnosed bone cyst on the fracture site.

CASE REPORT

A 6-year-old girl presented to the Emergency Department (ED) with the complaint of left knee pain, following a fall while playing with her older brother who was aged 12 years. They were playing horse riding where the patient was on the brother's back in crawling position which was about 2 feet high. She lost her balance and fell on her left side, landed on the buttock while her brother was pulling her left leg. She complained of left knee pain especially over the supra-patella region which worsened with weight bearing. She also refused to walk because of the pain.

The patient was born full term via spontaneous vaginal delivery (SVD) with a birth weight of 3.3 kg. There was no antenatal, intrapartum or postpartum complication. There was no prior history of admission. She had no past medical history and no history of fracture or bone disease before. Her developmental was according to the age with no significant delay. She was the third out of four siblings. There was no history of malignancy or bone disease in the family.

Knee radiograph did not show any evidence of fracture, subluxation, or dislocation (Figure 1). She was allowed home with analgesia and returned or reassessment after 3 days.

At the time of reassessment, the patient was unable to bear weight, the left hip was held in flexion, abduction and external rotation position, while the left knee was in full flexion. She refused to move the knee and hip because of pain. On examination, the left knee did not have any swelling or tenderness. However, her left hip examination revealed decreased left range of motion and reproduction of pain on the patient's left knee. Otherwise, the patient had no fever, the vital sign was stable, and blood

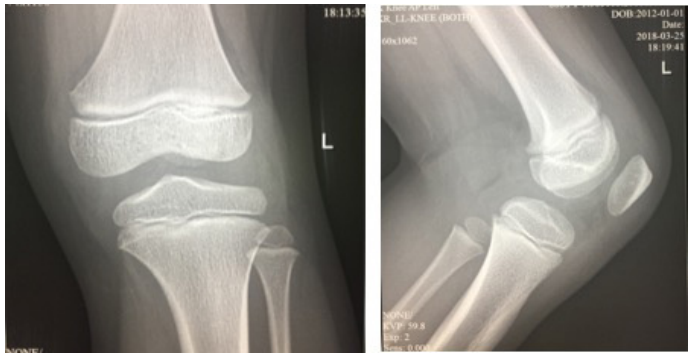

Figure 1: Left knee X-ray of the patient at day 1 of trauma. Posterioanterior view (left) and lateral view (right) showed normal x-ray

investigations were normal.

Radiographs of the pelvis and left hip were ordered based on the history and physical examination finding. The radiographs showed a comminuted intertrochanteric fracture of left femur with an underlying bone cyst (Figure 2). The patient was referred to the orthopedic team for further treatment and placed in a Thomas splint (Figure 3). The orthopedic team decided to treat with a hip-spica fiberglass cast of the left lower limb under general anesthesia.

The fracture healed well (Figure 4) and after 3 months, she was able to walk without aids.

DISCUSSION

Proximal femur fracture in children and adolescents are of significance as the proximal femur fracture is prone to undergo osteonecrosis due to tenuous and changing blood supply to the femoral epiphysis. The prevalence of osteonecrosis after proximal femur fracture especially femoral neck fracture is very high at a rate of 29%

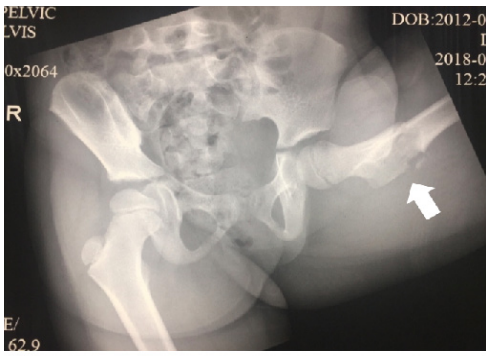

Figure 2: Posterioanterior pelvic X-ray of the patient at day 3 of trauma. The arrow shows comminuted intertrochanteric fracture of left femur

Figure 3: Posterioanterior left hip X-ray post traction. The arrow shows bone cyst at the left proximal femur.

Figure 4: Posterioanterior left hip X-ray three months post-trauma. The arrow shows healing fracture site with underlying bone cyst

out of 70 patients (Spence et al. 2016). Other than that, proximal femur fracture in paediatric population also can lead to coxa vara (30%), premature physeal closure (5% to 65%), non-union (1.6% to 10%), chondrolysis (uncommon) and infection (<1%) (Boardman et al. 2009).

Proximal femur fracture in a paediatric patient are easily missed because of failure to perform radiological investigation at the initial presentation. A study done by Guly showed that the prevalence of the missed hip fracture were due to failure to radiograph was 6.8%; with the highest was 12% (wrist fracture) while the lowest was 2.5% (skull fracture). Guly showed that most common reason for failure to radiograph were; i) other injuries elsewhere; ii) underestimation of injury; iii) poor localization of injury (Guly 2001). The patient had presented with left knee pain which was the referred pain from the obturator nerve. Articular branches of the obturator nerve supply the hip and knee joints and hence pain produced in one joint can manifest as referred pain (Jacob 2008). There has been a case report of a 33-year-old male presenting with left knee pain following a grand mal seizure which turned out to be an impacted comminuted fracture of the left proximal femur (Sandoval 2011)

In a case of proximal femur fracture in the paediatric population as a result of a trivial trauma, pathological fracture should be highly suspected. Common causes of pathological hip fracture in children are osteomyelitis, simple and aneurysmal bone cyst, fibrous dysplasia, Langerhans cell histiocytosis, osteogenesis imperfecta, disuse osteopenia, metabolic bone disease, and malignancy (Biermann 2002; Boardman et al. 2009). In this case, we discovered that the patient had an underlying bone cyst based on the radiograph. Although the common location of solitary bone cyst is the proximal humerus, up to 21% are detected in the proximal femur. The prevalence is much lower in the iliac bone (7%), and ischial and pubic bones combined (2%) (Bloem & Reidsma 2012).

Reduction of hip fracture is best performed ideally within 24 hours after the injury to reduce the risk of osteonecrosis to the proximal femur by restoring blood flow through kinked but intact vasculature (Boardman et al. 2009). However, with regard to the development of osteonecrosis, the timing of reduction may be a less important factor compared to the fracture type and age at the time of injury (Moon & Mehlman 2006). According to the Delbet classification,

type I, II, and III were 15, 6 and 4 times more likely to result in osteonecrosis compared to type IV fractures. Meanwhile, for the age factor, it is 1.14 time more likely to develop osteonecrosis in older children for each year of increasing age (Boardman et al. 2009).

CONCLUSION

Proximal femur fractures in paediatric population are rare injuries. In comparison to adult proximal femur fractures, these injuries are associated with serious complication especially osteonecrosis. We recommend a thorough physical examination to avoid missing this fracture type for patients presenting with unspecific pain from a trivial trauma.

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Received: 7 Jan 2019
Accepted: 24 May 2019