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Traumatic hip dislocation in children (A case report)

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Abstract
Traumatic dislocation of the hip in children is a rare disease. It only represents 5% of hip dislocations in all age groups. Before 10 years, the mechanism is often a minimal domestic accident; after 10 years, the dislocation occurs with the waning of an accident of the public highway. It is different from that of the adult by its rarity, its ease of reduction and better prognosis. This is an emergency trauma: risk necrosis of the femoral head (If delayed reduction). We report a rare case of an 8 year old girl, who suffered from bipolar trauma after being struck by a car causing a head trauma and post-traumatic dislocation of the right hip. The diagnosis was clinically confirmed by the results of standard radiographs and CT scans of the pelvis. The consultation period to emergencies was 6 hours after the trauma. We performed an hour after a closed reduction under general anesthesia for hip dislocation with establishment of a splint pelvic-pedal for analgesic keep for four weeks. The radiological outcome was satisfactory. The child was discharged the next 2 days. Reviewed in consultation after a month, the clinical examination showed a steady left hip. Traumatic dislocation of the hip in children is a rare diagnosis, the management should as urgent as possible to overcome the different possible subsequent complications dominated by coxa magna.

Keywords: hip dislocation, traumatic hip, children

Introduction
Traumatic hip dislocation (THD) is rarely encountered in childhood, representing 2-5% of all dislocations in all age groups. Therefore, a lot of series consist small number of patients in the literature. Traumatic hip dislocation usually develops as a result of minor trauma. Owing to the elasticity of the periarticular structures in children with THD, associated acetabulum or femoral head fracture is rarer in comparison to adults. Transepiphyseal fractured dislocation is also very rare in children. In patients with THD, bad functional and radiologic results may occur due to complications such as femoral head avascular necrosis (AVN) and posttraumatic osteoarthritis in long-term. AVN is usually associated with delay in reduction time. Early diagnosis and concentric closed reduction are critical issues in the treatment of THD. If closed reduction cannot be achieved or concentric reduction cannot be obtained, these patients should be treated by open reduction. In addition, open reduction is also the first choice in patients with fracture-dislocation.
Our observation shows this unusual injury, so little known, little codified care, and whose series reported in the literature, are modest in number of cases. We will proceed through the study of our case of traumatic dislocation of the hip in children to clarify the epidemiological, treatment of this disease and its long-term development with a review of published series.

Materials & Methods
We report the case of an 8-year-old girl admitted in the table of bipolar trauma to cranial impact point and right lower limb following a road accident (pedestrian hit by car).
Having as antecedents, operated for a tonsillectomy and resection of the adenoids vegetations is 4 years ago.
The clinical examination finds a conscious child in good general condition, hemodynamically stable and respiratory.
On the articular plane we note a vicious attitude of the lower right limb in internal rotation and shortening of the limb with total functional pain and impotence (Figure 1).
After performing the systematic radiological assessment in front of all traumatized (Rx thorax, abdominal ultrasound and cerebral CT) who are normal.
An X-ray of the pelvis face and profile showed posterior dislocation of the right hip without visible fracture (Figure 2).
Orthopedic closed reduction was subsequently performed under general anesthesia and under scope control by the image intensifier with a complete and perfect reduction of the femoral head.
The radiological results were satisfactory with a restored bilateral symmetry of the articular anatomy confirmed by the X-ray of control (Figure 3).
A performed CT Scan of the hip confirming the dislocation reduced and isolated from any fractures of the head of the femur or acetabulum (Figure 4).
Revised after a month and 6 months, showed a stable left hip on the clinical examination.
A scintigraphy was performed for signs of necrosis of the femoral head which returned normal.
In the decline of 1 year, we haven't noticed any recidivism and the functional results were good. On the radiography we do not have any signs of avascular necrosis no changes of the

head of femur, of the acetabulum or the joint space.
It is planned to repeat another scintigraphy after 2 years of the trauma.

Discussion

Traumatic hip dislocation is unusual in children [1]. Posterior traumatic hip dislocation occurs in children with minimal trauma and can be reduced without effort under sedation and analgesia and chances of complications are rare. It is usually seen in the pre-adolescent age group between seven and ten years of age [2]. It is rarely seen below five years of age [1]. Our child was eight years old. The youngest child of the series of R.Vialle and al [3] was two years and four months. The youngest child in the series of Mehlman and al [4] is aged two years and eight months. In our case it was a female but in the most studies [5, 6], the male predominance was clear; it is explained perhaps by the most important exhibition of the boys to injury, this contrary to hip dysplasia, where the female sex is predominant. In children under 10 years, the mechanism is minimal: it is mostly a domestic accident, like the case of our patient. This benign trauma contrast with the scarcity of traumatic dislocation of the hip in young children [1, 2]. A factor predisposing to dislocation at this age was found in five patients of the heterogeneous series, all under six years. This is a moderate coxa valga in four children and a lack of external coverage of the femoral head in moderate four children. However, it seems that these factors only partially explain the benignity of the dislocation at this age since other factors involved were selected by some authors to explain the occurrence of dislocation at this age to know laxity, the capsular ligament fragility, the usual low ages [3, 5] as the predominant cartilaginous structure of the acetabulum [7]. However, the dislocation can be idiopathic as the case of our patient. In over 80% of the series in the literature the dislocation is posterior. It is the case of our traumatic dislocation of our patient which was purely of posterior iliac type. According to Brandao [8], the isolated nature of the dislocation of children under 10 years has been linked to the simple mechanism of dislocation and soft cartilaginous structure of the hip joint at this age. For him, you need a high-trauma energy, which usually occurs in older children, to have the opportunity to observe a femur fracture associated with dislocation [8]. Similarly, Barquet [9] found that the severity of the trauma responsible for the dislocation tends to increase with age. Most authors are reducing the dislocation under general anesthesia [3, 10], others under simple sedation [4, 11]. All series used general anesthesia in a systematic way at the beginning of their experience, but the finding of the frequency of spontaneous reductions in small children, led to the offer in little children because of the minimal character of the causal trauma to reduce it by a 1 kg stuck weight traction combined with analgesic. A simple muscle relaxation allows the child to the rapid reduction of the dislocation and avoids general anesthesia. In the series of Mehlman and al [4] 62% of children had a reduction simply by sedation. We proceeded to a reduction under general anesthesia for our patient. After the reduction, a radiograph of the pelvis seems sufficient if it is normal [12]. However, the slightest suspicion of a widening spacing is suspect capsular interposition or osteochondral fragment and must move towards the application of computed tomography [3]. In our context, we performed a CT scan after the reduction in search of an associated fracture (acetabulum...). An asset is recommended after the reduction, to reduce pain, allow the absorption of hemarthrosis and the healing of the periarticular soft tissue. There is no consensus in the literature regarding the method or downtime [11, 13]. We recommend, if isolated, dislocation in children under six years, immobilization by splint or pelvic-leg cast for four to six weeks and in children over six years pulling stuck for three weeks followed by discharge for another three weeks. Evolution is generally favorable for post-traumatic dislocation of the child. However, a clinical and radiological follow up is needed for at least 2 years after the trauma. The series showed that there were in 50% of cases, the risk of occurrence of coxa Magna with growth disorders. The complications of traumatic hip dislocations in children are rare compared to those of the adult [7]. These complications are also variable depending on age. In small children, the most encountered complications are the interposition of soft parts that may require arthrotomy to extricate [6] and coxa magna by reactive hyperemia to soft tissue injury [3, 7]. This coxa magna, often moderate, has a radiological translation no clinical impact and tends to decrease during growth. No complications were found in our patient seen and had his dislocation reduced in the margin of seven hours after his trauma. In older children, complications are more frequent; the most redoubtable is osteonecrosis of the femoral head [2, 12]. In our patient,a scintigraphy was performed, 6 months later, for osteonecrosis of the femoral head and returned to normal.
Other complications is the intra articular incarceration of bone fragments, instability of the hip, heterotopic ossification, premature fusion of the growth plates and post-traumatic osteoarthritis [12, 14-16].
In our case, the younger age of this 8-year-old girl, lack of high energy trauma and absence of accompanying hip fracture reduced the occurrence of avascular necrosis. However chances of developing AVN can't be excluded as follow up time period is short. Irreducibility is rare and open relocation is rarely performed which may be due to interposition of soft tissue [3]. Prognosis following the traumatic hip dislocation is better in children than in adults [17, 18].

Fig 1: clinical picture showing the vicious attitude of the traumatized right lower limb

Fig 2: Standard radiography of the pelvis showing an aspect of a high pure right posterior iliac variety dislocation without fracture lesions

Fig 3: Standard radiography of the pelvis showing the hip dislocation reduced

Fig 4: Scan Image reconstruction confirming hip dislocation reduced without any associated fracture

Conclusion

Traumatic dislocations of the hip in children differ from adults by their scarcity, scarcity of associated fractures, their ease of reduction and better prognosis. However, care should be most urgently as possible to overcome the different possible subsequent complications dominated by coxa magna.

Conflict of interest

All the authors declare that they do not have any conflict of interest.

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