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Case Report

Proximal humerus fracture in a newborn-like a thief in the night

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ABSTRACT

Epiphysiolysis of the shoulder is rare in newborns. The radiographic evaluation may be limited due to the non-ossification of the epiphyses, and it can be misdiagnosed as a dislocation. Ultrasonography and MRI provide a better answer in the diagnosis of these lesions. We describe a clinical case of an epiphysiolysis of the shoulder in a newborn baby after caesarean section. A premature born with 26 weeks and 660 g shows oedema and ecchymosis of the right shoulder. Radiographies and ultrasound show a fracture-epiphysiolysis of the proximal humerus. She was treated in a conservatory way. At 8 months old, she has no complaints and has a normal range of motion of the shoulder.

Keywords: Epiphysiolysis, Newborn, Proximal humerus fracture

INTRODUCTION

Proximal humeral epiphyses injuries in neonates are rare.[1] Most patients have a history of a complicated birth, although child abuse must be excluded.[1,2]

Clinically, neonates might show tenderness, swelling around the shoulder, pain, irritability, muffled crepitus and even the pseudo paralysis, with the decreased active motion of the upper limb and complaints in the passive motion.[3,4]

The radiographic evaluation may be limited due to the non-ossification of the epiphyses and the only radiographic finding may be abnormal alignment of the diaphysis and the glenoid, thus appearing a dislocation.[5]

Diagnosis might be made with the help of ultrasound or MRI.

We describe a clinical case of an epiphysiolysis of the shoulder in a newborn after caesarean section. This is a rare lesion, with the few cases described in the literature.

CASE REPORT

We present a case of a premature newborn, the second child of a non-consanguinity couple (ages 36 and 34), without any registered intercurrences during gestation, until 23rd week of gestation, when the mother starts with contractures and heads to the emergency room. Due to a suspicion of amnionitis, the mother started a triple antibiotic prophylaxis with gentamicin, ampicillin and clindamycin. Pulmonary maturation induction was started with betamethasone. The child was born with 25 weeks+6 days, with 660 g, and was transferred to pediatric ICU.

On the second day post-partum, oedema was noted with ecchymosis on the right shoulder (Figure 1) The Orthopedics department was called and a thorax and shoulder radiograph were requested and are shown in Figure 2. The child had no signs of neurovascular compromise. Given that the newborn baby had several apnea and bradycardia episodes, with the diagnostic of initial acute respiratory distress syndrome, she was only immobilized with her clothing (Figure 3). Instructions were given to the carers, concerning the shoulder mobilization when dressing and undressing the child.

Figure 1: Tumefaction of the right shoulder, second day post-partum.

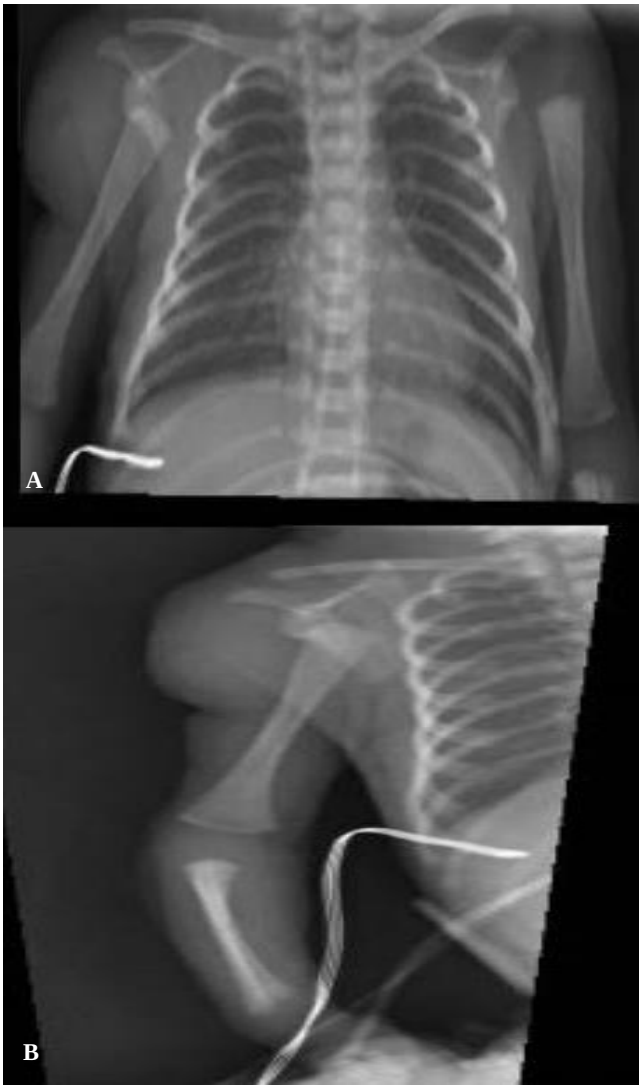

Figure 2 (A and B): Right arm x-ray, first day post-partum.

Figure 3 (A and B): Control x-ray after immobilization with clothes.

After stabilization, an ultrasound was performed, demonstrating a rise of the humeral metaphysis and a congruency of the glenohumeral articulation. We consider the diagnosis of a fracture-epiphysiolysis.

At 3 weeks, passive motion was authorized.

At one-month post-partum, another radiograph was obtained (Figure 4), showing a fracture in the remodeling process. Instructions were given to mobilize the shoulder carefully, but within full range of motion.

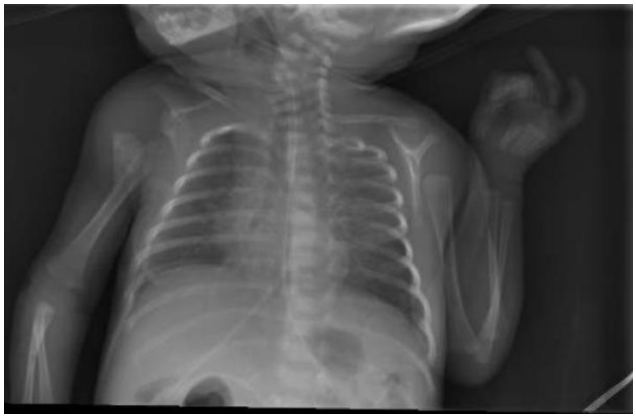

Figure 4: Thoracic radiograph, one month post-partum, with a shoulder fracture in remodeling process.

Figure 5: Shoulder x-ray at 4 months.

Figure 6: Shoulder x-ray at 8 months, with remodeling.

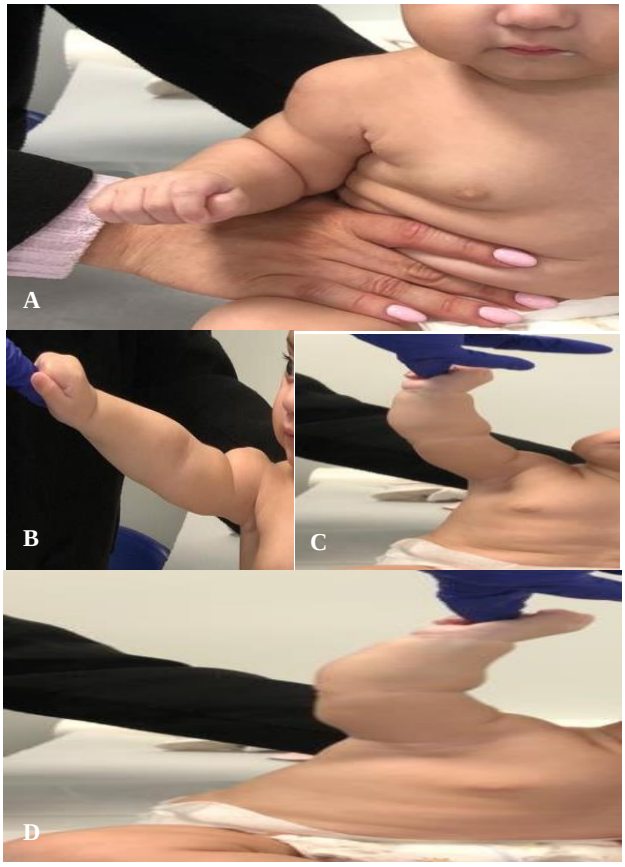

Figure 7 (A-D): Normal ROM of right shoulder, 8 months.

She went home on her 77th day post-partum and was re-evaluated in an orthopedic appointment at 4 months.

At 8 months, she had a shoulder radiograph with a fully remodeled fracture (Figure 6) and a normal ROM of the shoulder (Figure 7). She has no complaints with mobilization.

She is now 2 years old and she has no complaints nor differences to the other shoulder.

DISCUSSION

Even though caesarean section has reduced the incidence of birth-associated injuries, emergency caesarean sections with high tractions increase the risk of humeral and femoral fractures.[4] Prolonged or difficult labor, deliveries complicated by shoulder dystocia, breech presentation and transverse lie are risk factors for birth-associated injuries.[5]

Neonatal proximal humeral epiphysis fracture separations are usually presented with swelling, tenderness, decreased active motion and irritability with passive motion. There might be a muffled crepitus associated.[1,2,5]

Due to the non-ossification of the epiphysis, injuries might be missed or misdiagnosed. Differential diagnosis includes clavicular fracture, shoulder dislocation, humeral shaft fracture, brachial plexus injury, septic arthritis or osteomyelitis, although the last two are uncommon in neonates.[1,4]

Plain radiographies might lead into a misdiagnosis of shoulder dislocation, as they may show only an abnormal relation between the humeral shaft and the glenoid. However, the shoulder capsule and it's accessory structures are much stronger than the cartilaginous epiphysis. Therefore, even though shoulder dislocations have been reported in neonates, with a radiography suggesting a shoulder dislocation, it is advisable to exclude a proximal humerus fracture.[1,5]

Ultrasound has the ability to visualize the non-ossified epiphysis, which appear as hypoechoic structures with multiple, internal echogenic foci.[5] The supine position with the shoulder in abduction may provide better imaging than an attempt on coronal planes.[1] Ultrasound is also a non-invasive, cheap and easily accessible imaging resource, with no need for sedation. The main disadvantage is the user-dependent learning curve, and it might provoke pain during its execution over a fractured shoulder.

MRI on the contrary, is an expensive imaging resource, which might not be available in every center, but that provides a clear view of the fracture. It may require sedation, but some infants can perform an MRI while asleep after feeding.[3-5] It uses non-ionizing radiation and there is no need for manipulation of the upper limb.

Arthrography can provide the diagnosis, but due to its use of a large dose of radiation and the high risk of subsequent infection, it has been less used nowadays.[1]

Treatment of these lesions in neonates is usually conservative, with bandage or dressings for 2-3 weeks, and then active motion to rehabilitate the shoulder. The prognosis, due to the healing capacity of neonates, is good in the vast majority of the cases.[1,5]

CONCLUSION

The fracture separation of the proximal humeral epiphysis is a rare lesion in neonates, which can be easily missed or misdiagnosed. It is important therefore to raise attention to the common misdiagnosis of a shoulder dislocation in the plain radiographies, and the need for another imaging exam to provide the correct diagnosis. Most of these lesions can be treated in a conservatory way with good results.

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REFERENCES

1. Guo JB, Zhang JD, Zhao YM, Yang Y. Fracture separation of the proximal humeral epiphyses in neonate: a case report and literature review. Chin J Traumatol. 2010;13(01):62-4.
2. Sferopoulos N. Traumatic Separation of the Distal Humeral Epiphysis. ARC J Orthope. 2017;2(1):24-8.
3. Söyüncü Y, Çevikol C, Oyüncü S, Yildirim SA, Akyildiz F. Detection and treatment of traumatic separation of the distal humeral epiphysis in a neonate: a case report. Turk J Trauma Emergency Surg. 2009;15(1):99-102.
4. Sabat D, Maini L, Gautam VK. Neonatal separation of distal humeral epiphysis during Caesarean section: a case report. J Orthop Surg. 2011;19(3):376-8.
5. Varghese J, Teng M, Huang M, Balsam D. Birth injuries to growth plates: A sheep in wolves' clothing. J Clin Ultrasound. 2017;45(8):511-4.

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