



Nursemaid's Elbow in a Newborn

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Abstract

Pulled elbow is characterized by a subluxation of the radial head, usually reported in children between 1 and 4 years of age. It is a condition that requires closed reduction, with an excellent prognosis as it allows pain free mobilization a few minutes after reduction. As the injury mechanism is axial traction of the upper limb, this injury is usually associated with traction caused by adults on the child for which the nickname Nursemaid's elbow was given. The authors describe a case of pulled elbow diagnosed in a newborn in which traction was applied to the upper limbs during delivery, treated using supination technique. Therefore, It's the case of nursemaid's elbow described at a youngest age.

Keywords: Pulled Elbow; Newborn; Breech Presentation

Introduction

Pulled elbow, also called nursemaid's elbow is a very common phenomenon in children aged 1 to 4 years, average age of 28,6 months [1]. It occurs due to a radial head subluxation caused by axial traction or a sudden pull of the extended pronated arm, but this mechanism is not universal. The annular ligament encircles the radial head and holds it against the ulna. In this condition the annular ligament displaces proximally, partially over the radial head, becomes trapped in the radiohumeral joint between the radial head and capitellum, blocking full supination of the forearm [2]. As the child grows the ligament becomes thicker and stronger preventing its entrapment.

A nursemaid's elbow is suspected when we are facing a child who refuses to move the affected limb and keeps the elbow in slight flexion with a pronated forearm. There may be tenderness at the radial head and usually signs of trauma like ecchymosis and edema are absent.

Diagnosis is based on clinical history and physical examination; however it may be necessary imaging when there is no typical axial traction. Radiographs are typically normal in nursemaid's elbow, however, displacement of the radiocapitellar line may be present [3].

Treatment consists of closed reduction of the subluxation. There are two main techniques for reduction: the supination technique and the hyperpronation technique, with some studies suggesting that pronation method might be more effective and less painful than the supination [4]. If the reduction is performed successfully, no immobilization is required, and the prognosis is excellent, however, recurrence rates ranging from 27% to 39% are reported [5,6]. The peak of incidence of pulled elbow is at age 1-2 [7] and with the youngest reported patient being 2 months old [8].

We describe the first pulled elbow in a neonate following delivery, therefore, it's the case of nursemaid's elbow described at a younger age.

Case Presentation

A female first born, 1720 g in weight, was delivered in a breech presentation in the 32th gestational week. During a cesarean delivery the upper limbs of the newborn had been manipulated. The newborn was in breech presentation, so extraction was performed by applying traction directly on the upper limbs. According to the obstetric team it was a difficult delivery, and a lot of force was applied. One day later it was noticed that the baby was unwilling to move her right upper limb. Her right elbow was swollen with a

mild dysmorphia, and the forearm was in pronation (Figure 1). She didn't move the elbow spontaneously and attempts of flexion or extension it induced the newborn to cry. Radiographs were taken to exclude any fracture or dislocation, showing no lesion and normal alignment of the elbow with the forearm in pronation (Figure 2). The patient had no fever or other symptoms that could explain a painful joint. Considering the recent history of manipulation of the upper limbs and no lesion identified on imaging, Nursemaid's elbow diagnosis was assumed. Reduction was performed by forearm supination technique with the elbow flexed and a subtle "snap" sensation was felt laterally over the radial head. After reduction there was spontaneous resolution, with recovery of function and normal resting position of the forearm (Figure 3). A radiograph taken afterwards ruled out any iatrogenic lesion provoked by reduction maneuvers (Figure 4). During the two following weeks she had a pain free full range of movement of the right upper limb without any mechanical block. When re-examined at 8 months of age the function of the elbow had remained entirely normal, and the parents didn't report any recurrence of pulled elbow.



Figure 1: Right forearm in pronation of fracture or dislocation.

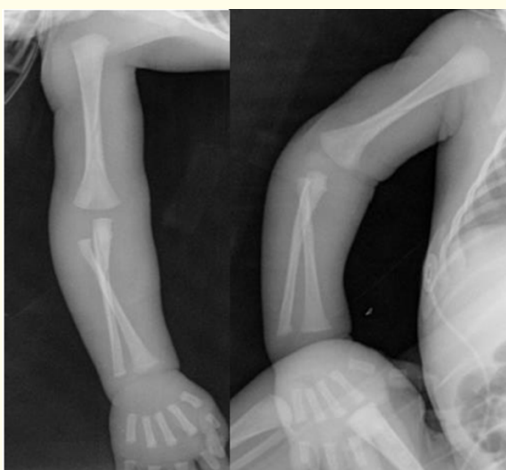


Figure 2: Radiographs with no sign.



Figure 3: Right elbow after reduction.



Figure 4: Radiographs after reduction.

Discussion

The injury mechanism for Nursemaid's elbow is the application of axial force to the upper limb, leading to annular ligament displacement, which lies between the proximal radius and the capitellum. In a child, there are many differential diagnoses for a painful elbow with limited supination after trauma, such as supracondylar fracture [9], olecranon fracture, radial neck fracture, lateral condyle fracture and elbow dislocation, with pulled elbow being an exclusion diagnosis. In the case presented here all the evidence pointed towards to a pulled elbow diagnosis: the mechanism - traction applied to the newborn's superior limbs; the physical examination compatible with nursemaid's elbow; the absence of signs of fracture or dislocation in the x-ray and the response to reduction maneuvers - closed reduction with supination technique.

Although this type of injury is most prevalent in children over 1 year old, several cases have been reported at younger ages [7], with the youngest being 2 months old [8]. Assuming that ligamentous laxity is a risk factor for nursemaid's elbow [10], and that subluxation occurs due to the fact that the radial head is more pliable at these ages, the incidence should be higher the younger the child. Nonetheless is not clarified why the incidence is lower in children under 1 year old. A possible explanation is that at earlier ages, parents don't commonly lift the child by the upper limbs. Usually, at 12 months, children start to walk, and parents pull child's arm to keep them from falling, leading to radial head subluxation. In this specific case there was a difficult delivery because of newborn's breech presentation, so the obstetric team needed to apply traction on upperlimbs causing the pulled elbow.

Conclusion

There are no described cases of a pulled elbow at such young age, making this the first case of nursemaid's elbow ever described in a newborn. Therefore, we must be aware of this entity when dealing with a newborn with reduced mobilization of the upperlimb, especially if there is an obstetric history of breech presentation.

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