

Pulled/nursemaid's elbow

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Abstract

Nursemaid's elbow is a radial head subluxation caused by axial traction on the extended arm while the forearm is pronated, allowing for slippage of the radial head. A 2-year-old boy presented with pain, swelling and reduced range of movement of the right elbow for 4 days. The mother noted that the child was moving the right upper limb less often and there was tenderness over the right elbow. X-ray of the right elbow showed subluxation of the elbow joint with no obvious fracture. A trial of conservative management was decided upon and the patient was placed on a right elbow backslab with the right forearm in a supine position. On follow-up, there was no swelling, tenderness or neurological deficit noted. A repeat x-ray revealed normal findings.

Introduction

Nursemaid's elbow is a radial head subluxation caused by axial traction on the extended arm while the forearm is pronated, allowing for slippage of the radial head under the annular ligament^{1,2} such as when a child is pulled at the wrist to prevent a fall or picked up from the floor by their hand.³ It is also known as pulled elbow. This type of injury typically occurs in children between 1 and 4 years of age with a slight predominance in females.³ Local clinical symptoms with correlating history and no obvious radiological findings should alert the health professional to the diagnosis of pulled elbow. The mainstay of treatment is conservative with reduction by flexion and supination or hyperpronation. If left neglected, this may cause permanent functional disability of the elbow.

Aim

To highlight the importance of recognising the diagnosis of pulled elbow in the paediatric population by clinical means with and treatment by simple manipulation to avoid unnecessary future complications.

Case

S, a 2-year-old boy, presented to the emergency department with a 4 day history of pain, swelling and reduced range of movement of the right elbow and wrist. The patient's mother denied any history of possible trauma to the upper limb, apart from the child having an intermittent unsupervised period during a busy family gathering 4 days prior to the presentation. Initially, the child was treated in

a private clinic; but after 2 days, the mother noticed the child was not using the right upper limb much and there was tenderness over the right elbow. This prompted her to bring the child to the hospital. X-ray of the right elbow showed subluxation of the elbow joint with no obvious fracture (**Figure 1**). An attempt to reduce the subluxation was unsuccessful due to poor cooperation from the patient. A right arm backslab was applied and the patient was admitted for observation. Examination on the next day showed tenderness on the lateral aspect of the right elbow and minimal swelling with normal skin and intact circulation. The patient also had a normal range of motion of the elbow and wrist except for limited elbow extension due to pain. A trial of conservative management was decided upon and the patient was placed on a right elbow backslab with the right forearm in a supine position (**Figure 2**). On follow-up 2 weeks later, there was no swelling, tenderness or neurological deficit noted. A repeat x-ray revealed normal findings allowing the patient to be discharged from the orthopaedic clinic.



Figure 1. No obvious bony deformities on x-ray



Figure 2. Supination–flexion manoeuvre technique

Discussion

The child with a pulled elbow commonly experiences sudden acute pain and loss of function in the affected arm. On presentation, it is not unusual for the child to be calm and sometimes even be able to play. However, the child will refuse to use the affected arm and cry when it is supinated.

Pulled elbow results from a sudden pulling force applied to the extended arm of the child. Owing to the relative strength of the adult in comparison to the weakness of the child's supportive annular ligament, the applied force may not seem strong to the parents but resulting in subluxation of the radial head.

The young child is prone to this type of injury largely because of the anatomical features of their bones and ligaments. These include the shallow, concave radial head, relative plasticity of the cartilage and the immature annular ligament.

The history and clinical findings are sufficient to make the diagnosis, and radiography imaging is usually not necessary apart from excluding fractures.^{4,5} Scapinelli and Borgo⁴ in their study suggested that increased radio-coronoid distance on the affected side is the most frequent and visible sign, which can confirm the diagnosis of pulled elbow. Nevertheless, they agreed with common consensus that imaging procedures are not necessary to diagnose pulled elbow and are recommended only when the history is not typical, in the presence of deformity or traumatic skin lesions and in children over 6 years of age.⁴

The treatment consists of manipulating the child's arm so that the annular ligament and

radial head return to their normal anatomic positions. Various manoeuvres have been described worldwide with two techniques being most commonly used – hyperpronation and supination–flexion manoeuvres – in the reduction of the pulled elbow. Bek et al.⁶ in their randomised controlled trial of 66 patients concluded that the rates of final reduction for both were similar, but the hyperpronation manoeuvre was more efficient at the first attempt, easier for physicians and less painful for the children. A Cochrane Database Systematic Review to compare the effectiveness and painfulness of the different methods used to manipulate a pulled elbow in young children concluded that there was limited evidence at that time and recommended that a high-quality randomised trial be performed to strengthen the evidence.⁷ Children with pulled elbow usually respond dramatically to the reduction, but Taha⁸ in his study showed that immobilising the elbow for 2 days after the reduction improves the success of treatment for a pulled elbow and reduces the risk of recurrence. In rare cases, subluxation may lead to osteochondritis dissecans of the radial head.⁹

Summary

In conclusion, pulled elbows are usually caused by a sudden pull or jerk to the arm. They are usually easy to diagnose and reduced by flexion and supination or hyperpronation. If left neglected, nursemaid elbow may cause functional disability of the elbow. An important part of the management is educating parents about the risk of recurrence.

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