Journal of Hand Therapy 28 (2015) 212–216

Contents lists available at ScienceDirect

Journal of Hand Therapy

journal homepage: www.jhandtherapy.org

JHT Read for Credit Article #358.
Special Issue

Transient neonatal radial nerve palsy. A case series and review of the literature

M. Belen Carsi MD, PhD, FRCS [a,*], Anna M. Clarke MB, ChB, FRCS [b], Nicholas P. Clarke ChM, DM, FRCS, FRCSed [a,c]

[a] University Hospital of Southampton NHS Foundation Trust, Tremona Road, Southampton SO16 6YD, UK
[b] University Hospital Bristol NHS Foundation Trust, Upper Maudlin St, Bristol BS2 8HW, UK
[c] Faculty of Medicine, University of Southampton, Tremona Road, Southampton SO16 6HW, UK

ARTICLE INFO

Article history:
Received 27 August 2014
Received in revised form
13 October 2014
Accepted 14 October 2014
Available online 29 October 2014

Keywords:
Neonate
Radial nerve palsy
Nerve palsy
Brachial plexus injury

ABSTRACT

Transient neonatal radial nerve palsy manifests at birth by wrist drop and intact elbow and shoulder function. Spontaneous resolution is universal. We present a case series, including two bilateral cases, and a review of the cases found in the English literature, hypothesizing how this condition is probably misdiagnosed as brachial plexus injury.

Introduction

Isolated radial nerve palsies in the newborn are rare, with 65 cases described so far in the English literature. When radial nerve palsy presents in isolation, spontaneous recovery is the norm. However, radial nerve palsy can appear associated with other pathologies, such as brachial plexus injury, congenital constriction bands, birth trauma causing upper limb fractures, shoulder sepsis or Caffey's disease. Although these conditions share some risk factors, the natural history is quite different. This has implications in parental counseling and treatment planning.

We describe two further cases of bilateral nerve palsy and six patients with unilateral affectation, driving attention to the commonalities of these and other cases in an attempt to aid the clinician in distinguishing this entity from other disorders presenting with similar symptoms.

Case reports

Case 1

The first case relates to a first born male baby to a mother aged 25. The pregnancy was largely uneventful. At 40 + 4 days the patient experienced a show and some Braxton Hicks contractions. These continued until 40 + 8 when a stretch and sweep procedure was performed. The head was noted to be engaged at this stage. The following day, spontaneous rupture of membranes occurred and contractions continued with no dilation of the cervix. At 40 + 12 the labor was induced and a 3.9 kg cephalic presentation baby was born by ventouse assisted delivery due to foetal tachycardia.

It was noted soon after birth that the child had bilateral wrist drop but intact biceps function. There was weakness of the extensors of wrist, fingers and thumb with preservation of grasp and function of other intrinsic muscles of the hand (Fig. 1). An area of induration and a concomitant skin lesion were obvious over the posterolateral brachium of both arms. The child's wrist drop and hand function went on to completely resolve in 6 weeks, aided by physiotherapy, orthoses and taping.

Conflicts of interest: The authors report no conflicts of interest.

* Corresponding author.
E-mail address: belen_carsi@yahoo.com (M.B. Carsi).

0894-1130/$ – see front matter
http://dx.doi.org/10.1016/j.jht.2014.10.006

Fig. 1. Presenting position of the newborn: arms flexed and hands tucked under the axillae.

Case 2

Another 4 kg baby boy was born to a 42 year old primiparous mother. At 40 weeks early labour started but was slow to progress before spontaneous rupture of membranes at 40 + 6. The baby was cephalic presentation and ventouse assisted due to failure to progress through second stage.

The child was noted at birth to have a bilateral wrist drop. Equally, the characteristic skin markings were noted along the upper arms (Fig. 2). Again, BPI was ruled out as deltoid, biceps, triceps and grasp function were intact. A full recovery by conservative means (Fig. 3) was recorded 4 weeks after the diagnosis.

The following cases were retrospectively collected from the shoulder dystocia audit at our institution. The total number of births in the year 2012 was 6301. From those, there were 84 cases of shoulder dystocia reported (1.3%). All cases underwent upper limb radiographs as per protocol, and no fractures were identified.

Case 3

This 3.5 kg baby boy was the product of a full-term pregnancy (40 + 5), delivered by a primiparous mother, and requiring forceps due to fetal compromise. At birth, a left wrist drop was noted, together with full movements in ipsilateral shoulder and elbow. A

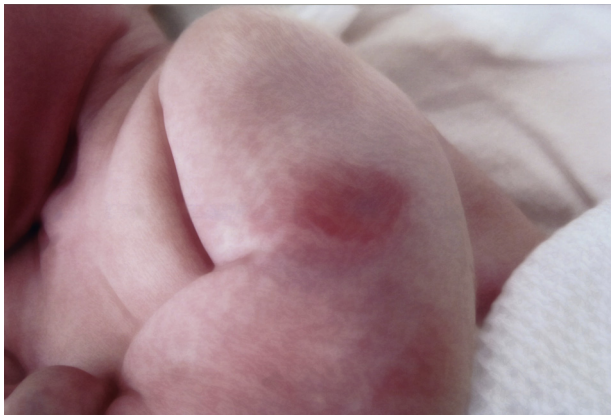

Fig. 2. Skin marking in resolution on the lateral brachium.

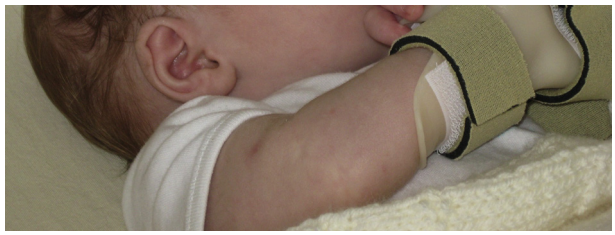

Fig. 3. Skin lesion almost resolved. Splints in situ.

cock-up splint was applied and complete resolution was noted at 8 weeks of age.

Case 4

A primiparous woman with known large uterine fibroids delivered a 3.7 kg baby girl by caesarean section at 40 + 6 due to failure to progress on the first stage of labor. A left wrist drop and an area of fat necrosis over the distal left lateral arm were noted. Full function was recorded six months after diagnosis.

Case 5

A hypothyroid mother with a BMI of 42.2 delivered a 4.8 kg baby girl by induction at 38 + 5. Examination revealed bruising over the left arm and diminished upper limb function, although antigravity movements of shoulder and elbow but not wrist or fingers were recorded. Three weeks later, the weakness was fully recovered.

Case 6

Another obese mother (BMI = 40.8) with gestational diabetes delivered at 38 + 2 a 3.6 kg baby girl by caesarean section due to failure to progress. Both arms appeared bruised but the left side presented a wrist drop with intact grasp. Two weeks later, the bruises were resolved but a fat necrosis lump on the left arm persisted. Although a splint was provided, it was poorly tolerated and abandoned. At six weeks, active extension of wrist, fingers and thumb was recorded.

Case 7

A 4.3 kg baby girl had a forceps assisted birth at 37 + 2 after a prolonged labor with failure to progress in second stage and complicated with pregnancy associated hypertension. She suffered severe perinatal asphyxia. Examination revealed extensive facial and bilateral arm bruising, facial palsy, active biceps and no wrist or finger extension on the right side. The examination at six weeks showed symmetrical upper limb function.

Case 8

This male baby was the 3.6 kg product of a full-term, uncomplicated pregnancy delivered after a prolonged labor with the assistance of forceps. A left wrist drop was noted soon after birth, with no external markings. Physiotherapy and splints were provided and full recovery noted at 3 weeks.

Discussion

The clinical features of transient neonatal radial nerve palsy are well described [Table 1]. The neonates present with wrist drop and inability to extend the thumb and the metacarpophalangeal joints