Bilateral Obstetric Palsy of Brachial Plexus - A Case Report

Bilateral Doğumsal Brakiyal Pleksus Felci

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Summary

Obstetric Brachial Plexus Palsy (OBPP) is one of the devastating complications of difficult or assisted deliveries. Brachial plexus palsy with upper root involvement most commonly affects the external rotators and abductors. Twenty percent of obstetrical brachial plexus palsies are bilateral and they represent a more severe condition. An eight-year-old girl patient with bilateral brachial plexus palsy was described and discussed in this report. *Turk J Phys Med Rehab 2009;55:126-7.*

Key Words: Brachial plexus, rehabilitation

Özet

Doğumsal brakiyal pleksus felci, zor doğum sırasında brakiyal pleksusun traksiyon yaralanması sonucu meydana gelen bir komplikasyondur. En yaygın formu, eksternal rotator ve abduktorların etkilendiği üst kök lezyonlarıdır. Daha ağır bir klinik formda karşımıza çıkan bilateral lezyonlar, doğumsal brakiyal pleksus felçlerinin %20'sini teşkil eder. Bu yazıda bilateral brakiyal pleksus felci olan 8 yaşında bir kız anlatıldı ve tartışıldı. *Türk Fiz Tıp Rehab Derg 2009;55:126-7.*

Anahtar Kelimeler: Brakiyal pleksus, rehabilitasyon

Introduction

Obstetric brachial plexus palsy (OBPP) is one of the devastating complications of difficult or assisted deliveries. The nature of this injury, with their severe loss of upper extremity function, leads to serious consequences for the personal and professional life of the patient (1,2). The incidence of OBPP as reported in the literature varies from 0.9 to 2.4 per 1000 new live births (3,4). OBPP presents with either Erb's paralysis (involving the C5, C6, 7), or total paralysis (involving C5, 6, 7, 8, and T1). Klumpke's birth palsy (involving mainly the C7 root) is only a historical interest and is no longer seen in modern obstetric practice (5). Pure upper plexus lesions occur at 73%, followed by total plexus injury at 4%, and pure lower plexus injury at 2% (6).

Risk factors for OBPP include macrosomia, assisted delivery or breech presentation, prolonged labor, excessive maternal weight gain, cephalopelvic disproportion, and subsequent shoulder dystocia. OBPP related injuries include clavicular fractures, physeal fractures of the humerus, fractures of the shoulder girdle, torticollis, facial and phrenic nerve palsy (7,8). Traction forces on nerves can cause various injuries, ranging from temporary conduction deficits to nerve root avulsion from the spinal cord.

Bilateral lesions are much less common and have been reported in 20% of the cases. We report a patient who sustained a bilateral brachial plexus palsy due to assisted delivery.

Case

An 8-year-old girl was referred to our clinic with decreased movements in her left and right arms since birth. The mother was a healthy 32-year-old woman. The patient was the fourth child of the parents and had been born at full term in breech presentation. Normal vaginal delivery had occurred after two hours.

Physical examination revealed prominent muscle atrophy of both arms (Figure 1). She had marked weakness in both of her shoulder muscles. The shoulder joints active range of motion was limited; however, its passive range of motion was normal. There was no sensory disturbance of her arms. Deep tendon reflexes were hypoactive in both limbs.

Neurological examination revealed weakness of the upper limbs and the Medical Research Council (MRC) score was 3/5. Thoracic outlet maneuvers yielded negative results. The routine blood tests were normal.

Electrophysiological findings of brachial plexopathy are demonstrated in Table 1.

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Figure 1. Muscle atrophy in both arms.

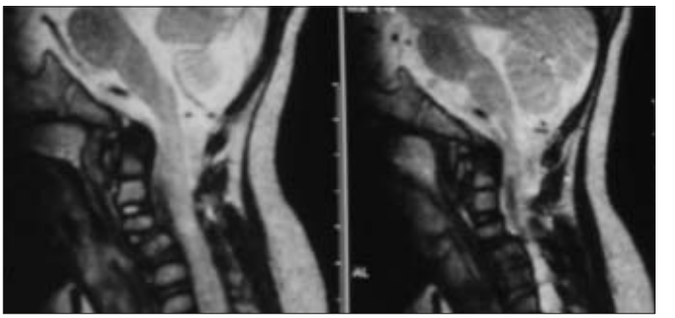

Figure 2. Magnetic resonance image of cervical spine.

Table 1. The electrophysiological findings of the patient.

Nerve Stimulation Record	Amplitude (μV) (distal/proximal)	Conduction Velocity (m/s)	Latancies (ms) (distal/proximal)
Motor			
Right medianus	14.6/13.5	48.2	3.7/6.5
Left medianus	17.1/16.9	53.7	4.0/6.7
Right ulnaris	15.8/12.5	50.0	2.3/5.2
Left ulnaris	21.8/19.7	59.6	3.4/6.0
Right musculocutaneus	3.0		4.2/4.2
Left musculocutaneus	1.8/1.9		4.2/4.2

The x-ray evaluation showed posterior shoulder subluxation. Cervical magnetic resonance imaging demonstrated a wide thecal sac from C2 to C4, spondylolisthesis at C3-C4 and a meningeal cystic lesion widening the neural foramina at right side (Figure 2).

Based on our radiological, electrophysiological and clinical findings, we diagnosed our patient as having brachial plexopathy, shoulder subluxation, cervical dural ectasia and spondylolisthesis.

Range of motion and scapular strengthening exercises were performed in the patient and orthopedic surgery consultation was obtained.

Discussion

Early diagnosed OBPP may recover completely with physical therapy only. A small percentage of cases require further physical therapy to achieve a better level of recovery. Significant improvement has occurred in 90% of these children as compared to a 50-70% improvement rate in those whose treatment was delayed (9,10).

Our patient had some differences from other infants born with OBPP. She had bilateral OBPP and no regular treatment since her birth till 8 years of age. In addition, there were traumatic lesions in her neck and posterior subluxation of both of her shoulders.

A multidisciplinary team approach is recommended for the management of OBPP. The initial goal of therapy is to maintain passive range of motion, supple joints and muscle strength. In our case, conservative treatment was not sufficient for recovery; deltoid and biceps muscles did not return to normal function. Surgical treatment was planned, including tendon transfer for internal rotation and shoulder joint fusion. A mobile arm support was recommended for the patient to facilitate her independent eating during the waiting period for surgery.

Upper plexus injuries tend to be the least severe and have the best prognosis among brachial plexus injuries. Total plexus injuries require significantly higher traction forces and result in severe injuries with attendant root avulsions and they have a poorer prognosis. The upper and middle trunks of brachial plexus were involved in our patient. The present consensus for nerve reconstruction in OBPP is between 3 and 6 months after injury. Good results may not be achieved with a later reconstruction.

Bilateral OBPP is a very rare condition. We suggest that OBPP should be kept in mind in cases with difficult and assisted delivery, and should be treated with conservative methods as soon as possible. Further, the possibility of presence of traumatic neck lesions and shoulder deformities must be considered in these patients.

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