

Late recovery of phrenic nerve palsy in a neonate: A case report

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ABSTRACT

Hyperextension of the neck at birth can injure the phrenic nerve and/or brachial plexus usually at the point where the phrenic nerve crosses the brachial plexus. We present a case of the preterm baby, who had Erb's palsy and diaphragmatic paralysis since birth after breech delivery. Persistent respiratory distress and chest X-ray gave a clue to diagnosis, which was confirmed on ultrasound. The baby recovered on the conservative approach at 2 months of life without surgical plication. This study describes that late spontaneous recovery up to 2 months is possible in a newborn with respiratory distress due to phrenic nerve palsy.

Key words: *Diaphragmatic paralysis, Erb's palsy, Respiratory distress, Surgical plication*

Hyperextension of the neck at birth can injure the phrenic nerve and/or brachial plexus usually at the point where the phrenic nerve crosses the brachial plexus. It has been found that approximately 75% of the patients with diaphragmatic paralysis also have brachial plexus injury [1]. Important risk factors associated are vaginal breech delivery and forceps delivery. Phrenic nerve injury as a cause of respiratory distress in a neonate must be considered particularly in those with associated Erb's palsy. Management modalities include a conservative approach and surgical approach [2]. The purpose of this case report was to highlight the possibility of late spontaneous recovery of phrenic nerve palsy.

CASE REPORT

A 1.4 kg male baby born at a gestational age of 32 weeks by vaginal breech delivery with an Apgar score of 8 and 8 at 1 min and 5 min, respectively, developed respiratory distress soon after birth. The baby had right-sided Erb's palsy. On examination, the baby had respiratory distress with bilateral clear chest and equal air entry. Antenatal history of leaking per vaginum for 3 days was present. Due to the non-availability of immediate chest X-ray, the baby was initially managed as a case of respiratory distress syndrome with surfactant and oxygen support. This was provided with continuous positive airway pressure (CPAP) as respiratory distress was present in the setting of prematurity and very low birth weight.

However, due to persisting respiratory distress, first line antibiotics were added on day 3 of life. The sepsis workup was negative while the chest X-ray showed elevated right hemidiaphragm (Fig. 1). Lung ultrasound revealed the absent movement of the right hemidiaphragm, confirming a diagnosis of right diaphragmatic paralysis, possibly due to phrenic nerve palsy

(Video 1). Respiratory distress continued to persist throughout with a waxing-waning course and baby was continued on oxygen support through nasal prongs or headbox. Since day 55 of life, the respiratory distress started improving and oxygen was gradually tapered. The baby was off oxygen support by day 62 of life. Recovery was confirmed by lung ultrasound (Video 2).

DISCUSSION

Phrenic nerve palsy, in newborn, presents with respiratory distress and failure to thrive. The diagnosis may be missed initially because the emphasis is on diagnosing and treating other common causes of respiratory distress such as respiratory distress syndrome and sepsis as was in our case. The presence of right hemidiaphragm two intercostal spaces higher than left or the left hemidiaphragm one intercostal space higher than right on a chest radiograph points toward the diagnosis, which is confirmed by fluoroscopy or ultrasonography [3].

The management can be conservative or surgical plication of the diaphragm. Spontaneous recovery is reported in a small number of cases. Majority of the patients have been managed by diaphragmatic plication [4-6]. However, the decision to go for surgical intervention or to continue conservative management is difficult as the approaches vary [7]. Majority of the cases with spontaneous recovery did so within 1 month as reported earlier [3,5,6]. The maximum spontaneous recovery was seen in the first 2 weeks. In another case report, spontaneous recovery was seen at 7 weeks [4].

Some authors recommend surgical plication of the diaphragm if there is no spontaneous recovery by 1 month as the chances decline after that period [6]. It is also suggested that early surgical intervention be considered in cases dependent on mechanical



Figure 1: Chest X-ray showing elevated right hemidiaphragm

ventilation to decrease the duration of mechanical ventilation and associated complications [5,7]. In our case, the patient required oxygen support in the form of nasal CPAP and nasal prongs. Mechanical ventilation was not required at any point during a hospital stay. On conservative treatment, the patient had a spontaneous recovery at 2 months of age.

CONCLUSION

Late spontaneous recovery up to 2 months is possible in a newborn with respiratory distress due to phrenic nerve palsy.

Thus, conservative management can be considered for longer duration in such cases before resorting for surgical plication of the diaphragm.

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