

Spontaneous Pneumothorax in a Term Neonate – A case Report

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Abstract- Spontaneous pneumothorax is a recognised cause of respiratory distress in the neonatal period. Spontaneous pneumothorax occurring during the neonatal period in a term neonate is rare. We report a case of symptomatic spontaneous pneumothorax associated with congenital heart disease which needed intercostal drainage and mechanical ventilation in our NICU unit.

Index Terms- Spontaneous pneumothorax; Term Neonate

I. INTRODUCTION

A spontaneous pneumothorax is present shortly after birth in 1% to 2% of all infants, and the pneumothorax is symptomatic in approximately half of these. The incidence of spontaneous neonatal pneumothorax is twice as high in male as in female infants. Affected infants are usually full- or post-term. Usually, the infant has a history of fetal distress requiring resuscitation or a difficult delivery with evidence of aspiration of meconium, blood, or mucus. There is a high incidence of pneumothorax in infants with neonatal respiratory distress syndrome. Here we report a case of spontaneous pneumothorax in a term neonate in our NICU unit.

II. CASE REPORT

A 2440 gm male neonate was referred to our NICU unit from a private hospital for respiratory distress. Baby was born at 40 weeks gestation by emergency LSCS for the indication of PROM of 4 hours duration to a primi mother out of non consanguineous marriage. Baby cried well immediately after birth. Apgar score was 8/10 and 9/10 at 1 min and 5 minutes respectively.

But Baby developed respiratory distress at 1 hour of life. Hence baby was shifted to our unit and was placed on hood Oxygen.

On admission to nicu, Baby had a respiratory rate of 70/min, SpO₂ 85% with oxygen 10 L/min flow through Hood. There were chest retractions and air entry was reduced over right hemithorax and there was fullness over right chest.

An urgent Chest X ray was ordered which revealed a right sided Pneumothorax with mediastinal shift to the opposite side (Fig 1). ABG revealed severe respiratory acidosis. (pH – 6.98, PCO₂ – 123, PO₂-37.7 mmHg). In view of impending respiratory failure and shock baby was intubated and was put on assisted ventilation with inotropic support. Baby was started on Cefotaxime and Amikacin.



Fig 1. Showing Rt pneumothorax at 4 hrs of life.

We placed an emergency Intercostal drainage tube on the right chest. Check X ray showed ICD in position and the ICD was functioning well (Fig.2). Next day there was minimal turbid pleural fluid on right side of chest and was draining through the ICD tube. Hence the pleural fluid was sent for gram staining and culture. Antibiotic were stepped up to Piperacillin-tazobactam along with Amikacin.

After 48 hrs baby was weaned off from ventilator and inotropic support was gradually withdrawn. Pleural fluid culture showed gram negative bacilli (*Burholderia cepacia*) which was sensitive to Piperacillin. Hence same antibiotics were continued. Blood culture done twice showed no growth. Trophic feeds were started gradually and baby was tolerating feeds well.

USG cranium and abdomen KUB were found to be normal. 2D Echo showed ASD ostium secundum type 4mm in size. CT Thorax showed right sided pneumothorax with minimal basal right sided pleural effusion with collapse. No evidence of CCAM. (Fig. 3).

Baby improved with antibiotics and was on full feeds after 10 days of NICU admission. Antibiotics were stopped after 14 days and check X ray taken revealed a normal lung (Fig. 4). Now baby is on direct breast feeds with adequate weight gain and no respiratory distress.



Fig 2. Showing ICD in situ Rt chest

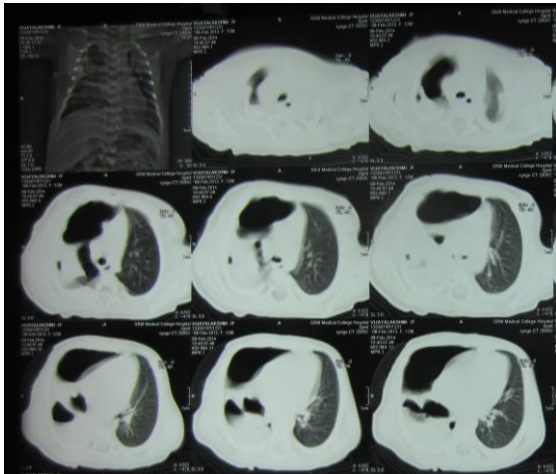


Fig 3. CT Thorax showing Right pneumothorax



Fig 4. Showing resolving pneumothorax with good lung expansion.

III. DISCUSSION

Pneumothorax can occur due to resuscitation, Positive pressure ventilation, very commonly. Meconium aspiration, and respiratory distress syndrome may be associated with spontaneous pneumothorax in newborn. [3].

Pneumothorax may develop in term newborns without pulmonary pathology or positive pressure ventilation, and this is

most probably due to high transpulmonary pressure generated with the onset of breathing [1]. Male gender and excessive birth weight are among the reported risk factors [4]

Co-existence of spontaneous pneumothorax and major congenital renal pathologies in term newborns has been reported in some studies [2, 4, 5]. Al Tawil et al. [2] found a urinary tract abnormality in 1.7% among 80 patients.

Our literature search has revealed a link between cardiac anomalies [9] and symptomatic spontaneous pneumothorax. Patients with less than 15–20% unilateral pneumothorax and no underlying pulmonary disease usually do not require treatment, as the condition usually resolves spontaneously.

However, if more than 20% of the lung field on one side is affected and/or if the patient's clinical condition is deteriorating and causing respiratory insufficiency, underwater drainage is mandatory [6, 7].

In conclusion, although symptomatic spontaneous pneumothorax is a rare occurrence in term newborns, early recognition and treatment is life saving. Usual manifestation is progressive respiratory difficulty starting soon after birth.

As previous studies have shown [5, 6, 8, 9], association of cardiac and renal abnormalities, we did echocardiography in addition to renal ultrasonography. Echo revealed ASD where as Renal ultrasound was normal.

Hence in a case of spontaneous pneumothorax, the associated renal and cardiac abnormalities are to be screened for and timely intervention in the form of intercostal drainage is lifesaving.

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