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Spontaneous Pneumothorax in A Term Neonate – A Rare Case Report

Smeeta Merlin[1], Thakur Keerthi[2], Ravanagomagan[3*]

[1]Junior Resident, Department of Paediatrics, Sree Balaji Medical College and Hospital, Chrompet, Chennai-600044
[2]Junior Resident, Department of Paediatrics, Sree Balaji Medical College and Hospital, Chrompet, Chennai-600044
[3*]Associate Professor, Department of Paediatrics, Sree Balaji Medical College and Hospital, Chrompet, Chennai-600044

Corresponding Author: [3*]Ravanagomagan
Chennai-600044

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ABSTRACT:

In neonates the incidence of spontaneous pneumothorax has been detailed to be all 0.05-1% all live births. Although in literature, it has been stated that, spontaneous pneumothorax may run in families and is autosomal dominant in inheritance, clear cut evidence is lacking. There has also been a correlation between spontaneous pneumothorax and anomalies of the genital tract. Strong resuscitation, vigorous aspiration of amniotic fluid stained with meconium, endotracheal intubation and respiratory distress syndrome have been linked with the occurrence of pneumothorax. However, the occurrence of a spontaneous pneumothorax, in the absence of the above - mentioned risk factors, is peculiar and rare. Here, we present a case of spontaneous pneumothorax in a term neonate, presenting with respiratory distress.

Keywords: spontaneous pneumothorax; term; risk factors

1. Patient and Observation:

Patient Information: A male term neonate, first born to a non - consanguineous marriage, via labour naturelle, developed respiratory distress, drop in oxygen saturation levels as measured by pulse oximetry, and increased effort of breathing as characterised by the use of accessory muscles of respiration, soon after birth. Birth weight of the neonate was 2.9 kg and appropriate for gestational age.

Clinical Findings: The neonate was irritable with an incessant cry. Prominent tachypnoea was present and recorded to be about 110 breaths/min.

Diagnostic Assessment: A marked bulge on the right side of the chest wall and unequal respiratory movements were observed. The bulge was observed to be ipsilaterally on the side of the pneumothorax (right side). Marked retractions were observed. Blatant central cyanosis was noted as well. On auscultation, there was decreased air entry, and grunting was present. A shift of the cardiac impulse, often described in cases of pneumothorax, was not appreciable in our current case.

Diagnosis: A prompt chest radiograph revealed a right sided tension pneumothorax.
Therapeutic Interventions: A 10 Fr chest tube was inserted along the anterior axillary line in the fourth intercostal space on the right side of the chest of the neonate, under aseptic precautions after an appropriate incision was made. The chest tube was secured and connected to a water seal system with 20cm of water column. A repeat chest radiograph was taken to confirm the position of the intercostal drain tube.
Focussed history taking revealed an unremarkable ante-natal course, and no known risk factors were present. Ante-natal US scans were normal and the neonate had good growth in utero.

Follow-Up and Outcomes: The infant was admitted to the NICU and serially monitored. The patient did not develop any metabolic derangements. The infant was discharged after 7 days of NICU stay. Follow up as uneventful and the patient achieved normal growth and development.

Informed Consent: a formal informed consent was obtained from the patient attendee.

2. Discussion:

In neonates the incidence of spontaneous pneumothorax has been detailed to be all 0.05-1% all live births.[1] Although in literature, it has been stated that, spontaneous pneumothorax may run in families and is autosomal dominant in inheritance, clear cut evidence is lacking.[2] There has also been a correlation between spontaneous pneumothorax and anomalies of the genital tract.[3]It is worth to mention that pneumothoraces we are observed more frequently on a chest radiograph than would be detected by clinical signs alone. Asymptomatic pneumothorax, associated with trapping of a vacillating amount of air in the interstitium, has an incidence of 1 in 200 full term neonates with no risk factors.[4]
A pneumothorax which manifests after strong resuscitative efforts, along with bag and mask ventilation for other positive pressure respiration is not considered as a spontaneous pneumothorax.[5] The cumulative or single manifestation of increased respiratory rate and effort, unilateral chest distension associated with decreased entry of inspired air on the same side is almost always confirmative of a pneumothorax. Although the clinical signs mentioned above, are virtually diagnostic of a pneumothorax, a chest radiograph other means of radiological confirmation is mandatory.

A high index of suspicion for associated pneumomediastinum must be maintained because unlike the visceral pleura, a decreased amount of air trapping and tension is required to rupture the mediastinal pleura.[6] Neonates with underlying parenchymal lung pathologies, and meconium aspiration syndrome, may have turbulences of their acid base status.[7]
There seems to be a direct correlation between atypical irritability and increased respiratory rate and effort. It is unsure if the irritability is due to the effect of hypoxia or irritation caused by the effect of extra pulmonary air in the mediastinum. Extrapulmonary air in the mediastinum may cause significant pain and discomfort.[8]
Following the insertion of an intercostal chest tube, water seal drainage following the principle of negative pressure drainage is absolutely indicated in all cases of tension pneumothorax as it shortens the absorption period.[9]

3. Conclusion:

Spontaneous pneumothorax, although a rare entity in the clinical setting, is one that should not be ignored. Clinicians and practicing medical professionals should be aware of this rare, but ominous condition which can be managed with quick decision making and prompt treatment. The sole absence of risk factors does not rule out the possibility of the occurrence of a pneumothorax. The importance and correlation between respiratory rate, effort of breathing and irritability has also been discussed above

Figures
Figure 1: Chest radiograph showing right sided pneumothorax
Figure 2: Chest radiograph showing ICD in situ

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FIGURES:

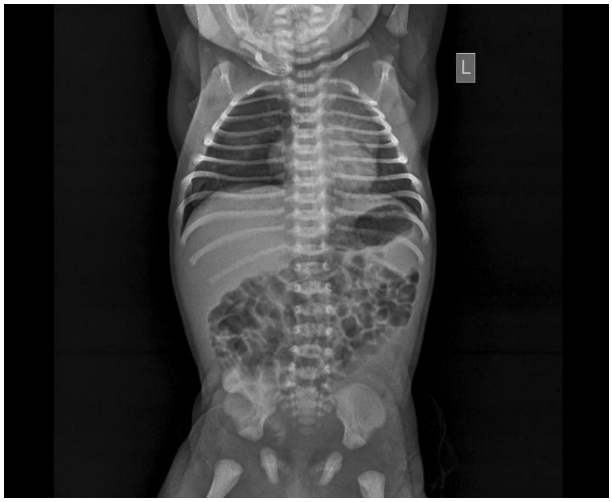

Fig 1 – Chest radiograph showing right sided pneumothorax

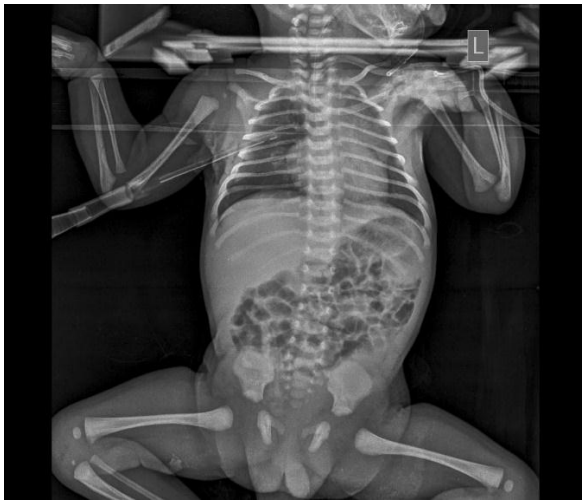

Fig 2 – Chest radiograph showing ICD in situ