

## An Unusual Case of Neonatal Stridor

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### ABSTRACT

A 25-day baby neonate presented with fever and stridor. He had severe respiratory distress at admission. The systemic examination was unremarkable. The roentgenogram of soft tissues of neck revealed widening of superior mediastinum. Computed tomography of neck and upper chest revealed multiple abscesses in the retropharyngeal space, parapharyngeal space, and superior mediastinum. The child improved on aggressive antibiotic treatment protocol. It raises awareness among paediatricians to consider this diagnosis when confronting neonate with fever and stridor. An early diagnosis and aggressive appropriate management will reduce mortality and morbidity associated with this life-threatening condition. A thorough search for a primary source of infection should be done. Neonate should be screened for primary and secondary immunodeficiency disorders before discharge.

**Key Words:** *Mediastinal abscess. Neonate. Stridor.*

### INTRODUCTION

The occurrence of a mediastinal abscess following a retropharyngeal abscess in the neonatal period is a rare entity.<sup>1-3</sup> Mediastinal and retropharyngeal abscesses are life-threatening infections in the newborn as mediastinitis has a high mortality.<sup>4</sup> The airway patency can easily get compromised due to narrow luminal size in this age group.

It is important to highlight that majority of etiologies of neonatal stridor are congenital in origin. A febrile neonate with stridor calls for an urgent attention, as prompt diagnosis and appropriate management can be life saving. Unusual site infections should also prompt clinicians to rule out underlying immunodeficiency disorders. Pediatricians should consider early the rare possibility of retropharyngeal and mediastinal abscesses when confronting a newborn with fever and stridor. Early diagnosis and treatment can be life saving in neonates.

### CASE REPORT

A 25-day-old male neonate presented with high grade fever (upto 102.8°F) and cough for 6 days along with respiratory distress and noisy breathing for 2 days. The child had an uneventful perinatal period, the umbilical cord fell by 10th day of life and was on exclusive breast feeding. He had no history of pyoderma, ear discharge, excessive irritability and seizures. On general physical examination, the child had heart rate of 180/min, respiratory rate of 74/minute, temperature of 102.8°F. He

had stridor and engorged neck veins with elevated jugular venous pulsations. Oropharyngeal examination revealed mild congestion of posterior pharyngeal wall without any swelling. Respiratory system examination was unremarkable. Rest of the systemic examination was normal.

Investigation revealed haemoglobin of 12.3 g/dl, total leucocyte count of  $28.5 \times 10^9/L$ , absolute neutrophil count of  $20 \times 10^9/L$ , platelet count of  $243 \times 10^9/L$ . Liver and renal function tests were within normal limits. C-reactive protein was positive. Blood culture sent on day one was sterile. Chest X-ray and X-ray of the soft tissue neck revealed a mild increase in posterior pharyngeal wall thickness and increased mediastinal widening that was irregular in outline and inconsistent with thymus. A lateral chest X-ray done showed a homogeneous opacity in superior mediastinum. A Contrast Enhanced Computed Tomography (CECT) of neck and chest was obtained, which showed a hypodense collection (36 x 29 x 24 mm) with contrast enhancement in the posterior pharynx and extension into the mediastinum (Figure 1). A thorough search was made for other sites of infection but was inconclusive. An ultrasonogram of abdomen did not reveal any pyogenic foci. The mother's HIV serology was negative. Baby's immunoglobulin profile was within normal limits for the age. His CD4 and CD8 counts were normal. A Nitroblue Tetrazolium (NBT) test showed normal phagocyte function. This helped in ruling out Chronic Granulomatous Disease (CGD) in the neonate.

The child was initially started on intravenous cefotaxime and amikacin in view of positive sepsis screen on the day of admission. The condition of the baby deteriorated in spite of antibiotics and, therefore, antibiotics were upgraded to vancomycin and ceftriaxone on day 3 of admission. Surgical drainage of the abscess was planned, however, parents did not consent for an operative procedure. Meanwhile, the baby showed a marked improvement in fever, respiratory distress within

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Figure 1: Retropharyngeal and mediastinal abscess.

72 hours of antibiotic change. At the end of 1st week of treatment, the stridor resolved. Therefore, invasive surgical procedure was deferred with close monitoring of the neonate. The child was given 4 weeks of intravenous antibiotics.

A follow-up MRI was obtained after completion of antibiotics which showed marked decline in size of abscess (7 x 9 x 8 mm). The child was discharged on oral linezolid and cefpodoxime for another 2 weeks. The child is thriving well and gaining weight appropriately on follow-up till 9 months.

## DISCUSSION

The occurrence of mediastinal abscess is a rare entity in pediatric age group, especially since the advent of widespread antibiotic usage. The association of mediastinal and retropharyngeal abscess in neonate is extremely rare and only a single case has been reported in literature.<sup>1-3</sup> The anatomical continuation of retropharyngeal and posterior mediastinum/superior mediastinum favours the contiguous spread of infection. The mechanical compression of the trachea along with underlying inflammation leads to upper airway obstruction and hence stridor. There has been numerous rare causes of stridor in neonates reported in literature.<sup>4-7</sup> Mediastinal abscess with descending mediastinitis is a highly fatal disease more so in neonates.<sup>8</sup> Non-traumatic mediastinal abscesses have been reported in literature.<sup>9,10</sup> After thorough literature search and to the best of authors' knowledge, only three published reports of mediastinal abscess in the neonatal age group could be found. The differential diagnosis of neonatal stridor include laryngomalacia, subglottic stenosis, vocal cord paralysis, laryngeal webs and choanal atresia.

The development of mediastinal abscess is usually secondary to spread from other pyogenic foci, commonly cellulitis/abscess, septic arthritis, pneumonia, and

pharyngeal abscess. The causative agent is commonly *Staphylococcus aureus* and *Streptococcus pneumoniae*. An early diagnosis and aggressive treatment of mediastinal infections is of utmost importance to reduce mortality and morbidity especially in this age group. Contrast enhanced computed tomography of the neck and upper chest is indicated for the extent of disease and aids CT guided percutaneous drainage. Children with mediastinal abscess respond well to minimally invasive interventions like suprasternal cervicotomy which is usually required and also helps in obtaining pus for culture and sensitivity to guide antibiotic therapy.

Among the 3 cases reported in literature two were females (50%). Predisposing factors included skin pustules in one patient, septic arthritis in second case and the third had retropharyngeal abscess as in this case. Fever was present in all 4 cases (100%); however, stridor was present in 2 cases only (50%). In this neonate, primary immunodeficiency and HIV was ruled out with relevant tests. It is of utmost importance to obtain aspiration for culture, although our child had responded to aggressive intravenous antibiotics.

To conclude, the screening of these neonates for primary immunodeficiency should be done. An awareness of this entity and early aggressive management will reduce neonatal mortality in this subset of children.

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