AN ACUTE STRIDOR IN AN INFANT-A case report

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Abstract: Stridor is a coarse, usually higher-pitched breathing sound typically heard on inspiration. Stridor is a sign of upper airway (extra thoracic) obstruction and may indicate critical airway obstruction requiring immediate intervention (1). Clinical presentation of stridor in the emergency department has life and death written all over. Any critically ill child presenting with stridor, can potentially develop complete airway obstruction. Therefore this emergency requires a swift, systemic protocol based approach followed by skillful intervention (2). Retropharyngeal and lateral pharyngeal abscess presents with inspiratory stridor (3). Infection in the retropharyngeal and lateral pharyngeal spaces can result in airway compromise or posterior mediastinitis, making timely diagnosis important (4). We are presenting a case of retro and lateral pharyngeal abscess that compromised the airway. Proper diagnosis and prompt surgical intervention was done which helped in saving the life of this child.

Keyword : stridor, retropharyngeal abscess, lateral pharyngeal abscess

Case Scenario:

4 months old male child, who was born to second degree consanguinous parents, delivered by elective caesarean section, cried immediately after birth presented to our emergency department with complaints of difficulty in breathing for 2 days. His birth weight was 3.5kgs with nil significant postnatal events. The child had normal milestones and was immunized up to date. He was on exclusive breast feeding from birth. The child was admitted with cough and cold for 4 days, high grade intermittent fever
for 2 days, which was not associated with chills and rigors. He also had weak cry and mouth breathing for 2 days. There was history of noisy breathing for 2 days, with no diurnal or postural variation and no aggravating or relieving factors. There was history of swelling over the right side of neck and breathlessness for 2 days. Altered level of consciousness in the form of irritability and refusal of feeds was also present. There was no drooling of saliva, aspiration or choking episodes, cyanosis, apnoeas or convulsions. There was history of cough and cold with fever 10 days ago for which the child was treated locally and was relieved of symptoms in 2 days.

General examination: Awake and anxious, moderately built, irritable, febrile, pale, inspiratory stridor, dyspneic/tachypneic. No cyanosis. No obvious external congenital abnormalities. Fig. 2 Pediatric Assessment Triangle showed stridor with respiratory failure.\(^2\)

Examination of Ear, Nose, Throat: Ear and Nose - Normal. Fig. 3 Throat showed no congestion, secretions were present. There was a bulge in the post pharyngeal wall on right side (Fig-3). Torticollis was present with head towards the right side. 3x4cm swelling was present over the mid sternocleidomastoid region (Fig-4) which was cystic, non tender. There was increase in the size of the swelling during cry. Transillumination was positive. Inspiratory stridor was present on throat auscultation.

Systemic examination:
Cardiovascular system was normal. Suprasternal, sternal, intercostal and subcostal retractions were present. There were no added sounds on chest auscultation. The child was irritable, tone and posture were abnormal, doll's eye movements were present, pupils were equal and reacting to light. There were no signs of meningal irritation. Child was investigated for FEBRILE ACUTE INSPIRATORY STRIDOR WITH RESPIRATORY FAILURE AND LATERAL NECK SWELLING. Complete hemogram: Hb-8.4 gms, Total Count was 9,800 cells/cumm, Differential Count was Polymorphs 58% Lymphocytes 40% Monocytes 02%, ESR-20mm in 30mts, 40mm in 60mts, RBCs-2.8 millions/cumm
X-ray of soft tissue of neck (Fig-5) was taken, which revealed anterior displacement of larynx and trachea, widening of prevertebral soft tissues (retropharyngeal abscess). Diagnostic aspiration was done from the lateral swelling with 22gauge needle under local anaesthesia and thick mucopurulent material was aspirated (fig.6). ENT and Paediatric surgeons opinion were sought.

**FIG. 6**
Direct microscopy of the mucopurulent material revealed , pus cells >10/field and gram positive cocci in clusters . Pus culture and sensitivity was done.
Incision and drainage done under general anaesthesia, through transoral route. Incision was made over the most prominent posterior pharyngeal wall bulge and 40-50ml pus was drained. The child was ventilated for 8 hrs post operatively and supplemental O₂ given through non re-breathing mask for 3days. 20ml/kg compatible whole blood was transfused post operatively. Intravenous fluids and sensitive antibiotics were started. Stridor disappeared and the respiratory rate came to normalcy. Pallor improved and the child became alert the next day. Repeat X-ray taken 24hrs after surgery showed no prevertebral soft tissue widening. The child became afebrile 24hrs after surgery and started taking oral feeds on the second post operative day.

**DISCUSSION RETRO AND LATERAL PHARYNGEAL ABSCESS**

*Retro and Lateral pharyngeal spaces* (~5~)
(Fig-7, 8) The retropharyngeal space extends from the base of the skull and, depending where the buccopharyngeal and alar fasciae fuse, perhaps into the mediastinum. It is bounded posteriorly by the alar fascia, anteriorly by the buccopharyngeal fascia, and laterally by loose connective tissue separating it rather incompletely from the lateral pharyngeal space.
The lateral pharyngeal space is bounded medially by the buccopharyngeal fascia and laterally by the pterygoid muscles and the capsule of the parotid gland. Its superior extent is similar to that of the retropharyngeal space in that it reaches the base of the skull; however, inferiorly it extends only as far as the hyoid bone, being limited by the fascia of the submandibular gland, stylohyoid muscle, and posterior belly of the digastric muscle.

**Retro and Lateral pharyngeal nodes**

The neck contains deeply located lymph nodes including retropharyngeal nodes and lateral pharyngeal nodes that drain the mucosal surfaces of the upper airway and digestive tracts. These nodes lie within the retropharyngeal space and lateral pharyngeal space, which are interconnected. The lymph nodes in these deep neck spaces communicate with each other, allowing bacteria from either cellulitis or node abscess to spread to other nodes. Infection of the nodes usually occurs as a result of extension from a localized infection of the oropharynx. Retropharyngeal abscess can also result from penetrating trauma to the oropharynx, dental infection, vertebral osteomyelitis, before and after removal of pharyngeal foreign body.

Retropharyngeal abscess are less common nowadays. It occurs most commonly in children <6 years of age, with a peak incidence between 3-5 years, due to a suppurating retropharyngeal node following a URT infection. Boys affected more often than girls. Up to 67% of patients have a history of recent ear, nose, or throat infection. Retropharyngeal nodes involute after 5 yr of age and therefore, infection in older children and adults is much less common.

Microbiology

Most often polymicrobial, the most common causes are group A beta hemolytic streptococci and staph aureus. Streptococcus viridans are the commonest pathogens (41%) in some areas. Other pathogens may include escherichia coli, haemophilus influenzae, klebsiella, and mycobacterium avium-intracellulare and oropharyngeal anaerobic bacteria which includes bacteroides spp, veillonella spp, prevotella spp, enterobacter spp, salmonella spp and morganella spp.

Clinical manifestations

Clinical manifestations of retropharyngeal abscess are nonspecific and include fever, irritability, decreased oral intake, and drooling. Neck stiffness, torticollis, and refusal to move the neck may also be present. The verbal child may complain of sore throat and neck pain. A recent case of a neonate presenting with stridor due to a retropharyngeal abscess has been described. Physical examination may reveal bulging of the posterior pharyngeal wall, although this is present in less than 50% of infants with retropharyngeal abscess. Cervical lymphadenopathy may also be present. Lateral pharyngeal abscess commonly presents as fever, dysphagia, and a prominent bulge of the lateral pharyngeal wall, sometimes with medial displacement of the tonsil. Prominent swelling on one side of the posterior pharyngeal wall confirms the diagnosis. Swelling usually stops at the midline because a medial raphe divides the prevertebral space.

**Investigations**

Lab Studies: Complete blood count, WBC is usually elevated. Blood cultures Obtain before administration of IV antibiotics. Incision for drainage (pus) and culture of an abscessed node provides the definitive diagnosis. Imagings: Lateral neck soft tissue films show the retropharyngeal space to be wider than the C4 vertebral body. Soft tissue neck films taken.
during inspiration with the neck extended may show increased width or an air-fluid level in the retropharyngeal space \(^{(4)}\) (Fig-4). In children, plain films and CT are the investigation of choice \(^{(10)}\). CT with contrast medium enhancement may reveal central lucency, ring enhancement, or scalloping of the walls of a lymph node \(^{(4)}\) (Fig-9). Chest X-ray: Necessary to exclude pulmonary or mediastinal complications like Aspiration pneumonia, Mediastinitis.

**Differential Diagnosis** \(^{(4)}\)

Epiglottitis (most important differential diagnosis in children \(^{(11)}\)), Cervical osteomyelitis, Meningitis, Foreign body aspiration, other possibilities include lymphoma, hematoma.

**Complications** \(^{(4, 8, 12)}\)

Airway compromise, sepsis, mediastinitis, Internal Jugular vein thrombosis (Lemierre disease, asevere systemic fusobacterial infection), carotid artery erosion, pericarditis, spinal epidural abscess, adult respiratory distress syndrome, erosion of the second and third cervical vertebrae, cranial nervedeficits (IX-XII) \(^{(12)}\), and pleural involvement.

**Treatment**

Options include intravenous antibiotics with or without surgical drainage \(^{(4)}\). **Medical:** Clindamycin is first-line treatment. A 3\(^{rd}\) generation cephalosporins combined with ampicillin-sulbactam or pipercillin-tazobactam or ticarcillin-clavulanate to cover anaerobes. Adjust antibiotics ascultures return. Continue oral therapy to complete at least a 14 day course. **Surgical:** Surgical drainage is the norm in pediatric retropharyngeal abscesses, probably because of the significant incidence of airway compromise at presentation (29\%) \(^{(13)}\). Up to 75\% of children with retropharyngeal abscesses respond to intravenous antibiotics alone \(^{(12)}\). Drainage indicated in patients with compromised airway or failure to improve with IV antibiotics \(^{(4)}\). Abscess can be drained transorally or external cervical and combined approaches \(^{(8)}\).

**CONCLUSION**

If a child of age less than six years is presenting with fever, inspiratory stridor and hyperextended neck, the possibility of retropharyngeal abscess should be considered as differential diagnosis. Here 4 months old infant presented with fever, inspiratory stridor, altered level of consciousness, torticollis and lateral neck swelling with respiratory compromise. Retropharyngeal abscess that extended to lateral pharyngeal space compromised the airway. We considered retropharyngeal abscess as a differential diagnosis along with other conditions like meningitis and epiglottis. We investigated for retropharyngeal abscess and timely intervention for respiratory compromise saved the life of this infant.

**REFERENCES**


