A Neck Mass and Stridor in a 54-Day-Old Infant

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A 54-day-old female presented to the emergency department with a 24-hour history of worsening cough, high-pitched stridor, and increased work of breathing. She was cyanotic with dusky skin and intermittent desaturations to 80%. She was a full-term baby with no prior medical history. A complete blood count revealed a hemoglobin of 9.8 g/dL with neutrophilia. An X-ray of the lateral neck demonstrated retropharyngeal soft tissue thickening. Computed tomography (CT) scan with contrast showed a large 4.3 cm × 2.1 cm × 5.5 cm fluid-filled mass deep to the sternocleidomastoid extending posteriorly into the retropharyngeal space and superiorly to the skull base (Figure 1). The differential diagnosis included lymphatic malformation versus infected congenital cyst. Due to concerns for airway compromise, the child was taken urgently to the operating room for intubation prior to magnetic resonance imaging (MRI). A grade 2b view of the larynx was obtained using direct laryngoscopy and the child was intubated. Magnetic resonance imaging with contrast demonstrated restricted diffusion suggesting purulent fluid within the cystic mass (Figure 2). The child underwent laryngoscopy in the operating room with transoral needle aspiration of 10 mL of purulent fluid, immediate decompression of the mass, and improved view on laryngoscopy.

The patient’s clinical picture was of a superinfected thyropharyngeal duct cyst. Cultures grew methicillin-resistant Staphylococcus aureus, which was sensitive to clindamycin. Two days after extubation, she developed worsening stridor and respiratory distress. The child was taken urgently back to the operating room. Intubation was difficult due to a mass effect by the fluid collection and interfered with exposure and passage of the endotracheal tube. The patient was intubated using an endotracheal tube loaded onto a 0° Hopkins rod telescope. The fluid collection was then drained via a transcervical approach. The cyst wall was identified deep to the anterior border of the sternocleidomastoid and then incised. A total of 20 mL of

Figure 1. Computed tomography of the neck with contrast. Axial and coronal images with a sagittal reconstruction. There is a fluid-filled structure deep to the sternocleidomastoid extending into the retropharyngeal space with airway compromise (wide arrow = cyst; narrow arrow = airway).
purulent fluid was drained and a Penrose drain was positioned and secured. Direct laryngoscopy demonstrated a grade I view at the end of the procedure. The patient's condition improved, and the drain was removed 4 days later. At 1-month follow-up, MRI of the neck demonstrated resolution of the cyst and no residual fluid collection.

Discussion

The differential diagnosis of a cervical mass in a child includes congenital cysts, dermoids, and vascular malformations.\(^1,2\) Thymic cysts are uncommon but usually present in the first decade of life along the path of descent of the thymus from the mandible to the sternal notch. Thymic cysts commonly present as a mass in the anterior triangle of the lower neck with mediastinal extension in 50%.\(^3\) Cervical thymic cysts can cause respiratory problems, stridor, dysphagia, hoarseness, and airway deviation.\(^4-7\)

The thymus usually rests in the anterior mediastinum covered by a loose connective tissue capsule and is primarily responsible for T-lymphocyte production. It arises from the ventral portion of the third pharyngeal paired pouches.\(^8\) Thymopharyngeal duct cysts are thymic remnants that are usually adherent to the carotid sheath.\(^1,5\) Magnetic resonance imaging is the imaging of choice due to greater soft tissue delineation and its ability to quantify airway compromise and to delineate mediastinal thymic tissue.\(^7\)

In this case, an X-ray of the neck, CT, and MRI scans were performed. The diagnosis was based on radiological and clinical features without histology. Definitive diagnosis is by histological evaluation of the removed cyst. These cysts have cholesterol granulomas under microscopy, but the most striking feature is Hassall’s corpuscles or keratinizing epithelial cells within the wall of the cyst.

Superinfection of a thymopharyngeal duct cyst can be treated by intravenous antibiotics and observation. Surgical treatment is recommended for airway compromise, if the abscess is greater than 2.5 cm\(^2\), or for failure to respond to the antibiotic therapy.\(^10,11\) The role of endoscopic drainage remains unknown, with external drainage being the gold standard. Postoperatively, there is a risk of respiratory compromise due to infection, hemorrhage, and rupture of the thymic cyst. Despite negative follow-up imaging, recurrence of the cyst in this child may occur as it was not excised. Thus, she will need to be followed closely. Thymopharyngeal duct cysts, once removed, usually do not recur.\(^3\)

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

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