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Research Article

Incidental Thornwaldt cyst in a child: An MRI diagnosis during evaluation for bacterial meningitis

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Abstract: ***Introduction:*** Thornwaldt's cyst is a rare, congenital lesion of the nasopharynx due to incomplete regression of the notochordal-pharyngeal connection. In the pharyngeal bursa, it creates a midline cystic cavity. Even though they are frequently asymptomatic, symptomatic cysts can result in occipital headache, halitosis, nasal blockage, postnasal drip, or Eustachian tube dysfunction.Diagnosis relies on nasal endoscopy revealing a well-circumscribed cystic mass in the posterior nasopharynx. High-resolution CT assists by demonstrating a low-attenuation midline lesion, aiding differentiation from other masses. Histology confirms the diagnosis. Management is conservative for asymptomatic cases; symptomatic cysts require surgical excision or endoscopic marsupialization, with excellent outcomes and low recurrence rates.

Keywords: Thornwaldt cyst Magnetic resonance imaging (MRI) Pediatric nasopharyngeal cyst

INTRODUCTION

Thornwaldt's cysts are benign cystic lesions of the nasopharynx, also known as nasopharyngeal cysts. They arise from persistent remnants of the notochord and are usually discovered incidentally during routine imaging studies performed for unrelated reasons. Most Thornwaldt's cysts are asymptomatic and remain unnoticed throughout life[1,2].

Although uncommon, larger or infected cysts may produce symptoms such as nasal obstruction, postnasal drip, recurrent infections, halitosis, foul-smelling nasal discharge, or ear-related complaints due to Eustachian tube dysfunction. Because these symptoms are often nonspecific, diagnosis may be challenging without appropriate clinical evaluation and imaging[1,2,6].

Radiological imaging plays a key role in diagnosis. On CT scans, Thornwaldt's cysts typically appear as well-defined, round lesions located in the midline of the posterior nasopharyngeal wall. They usually contain low-density material and do not enhance after contrast administration. MRI provides better soft-tissue characterization, demonstrating a cystic lesion with characteristic signal intensity and no significant contrast enhancement [1,2].

Management depends on the presence of symptoms. Asymptomatic cysts generally do not require treatment and can be observed with periodic follow-up when necessary. However, symptomatic cysts are best managed surgically. Endoscopic transnasal marsupialization or deroofing is the preferred treatment, allowing drainage of the cyst contents, relief of symptoms, and a low risk of recurrence[3,5,7].

CASE REPORT

A 13-year-old boy presented with high-grade fever, severe headache, vomiting, altered sensorium, and neck stiffness. Clinical examination was suggestive of acute meningitis. A lumbar puncture was performed, and cerebrospinal fluid analysis confirmed acute bacterial meningitis due to Streptococcus pneumoniae. Blood investigations were also suggestive of concomitant typhoid fever. The patient was admitted to the Department of Paediatrics and treated with appropriate intravenous antibiotics and supportive care, resulting in gradual clinical improvement.

As part of the evaluation for possible intracranial complications, contrast-enhanced magnetic resonance imaging (MRI) of the brain was performed. MRI revealed no evidence of acute infarction, intracranial hemorrhage, space-occupying lesion, or abnormal meningeal or parenchymal enhancement. An incidental well-circumscribed cystic lesion was identified in the midline posterior wall of the nasopharynx. The lesion appeared hyperintense on T2-weighted sequences, particularly on sagittal images, and was consistent with a Thornwaldt cyst (FIGURE 1,2).

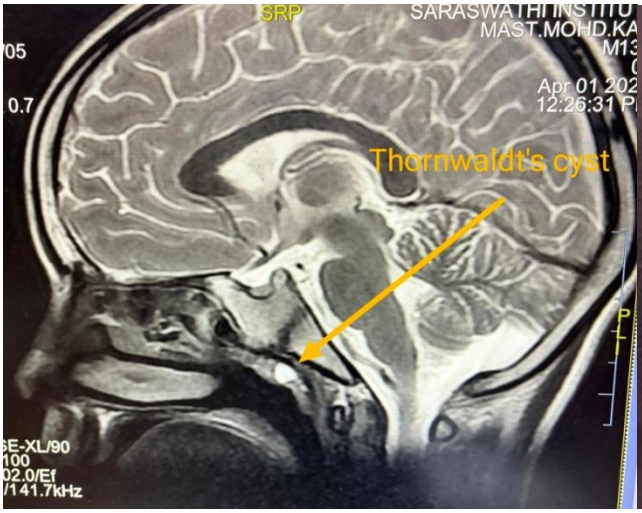

FIGURE 1

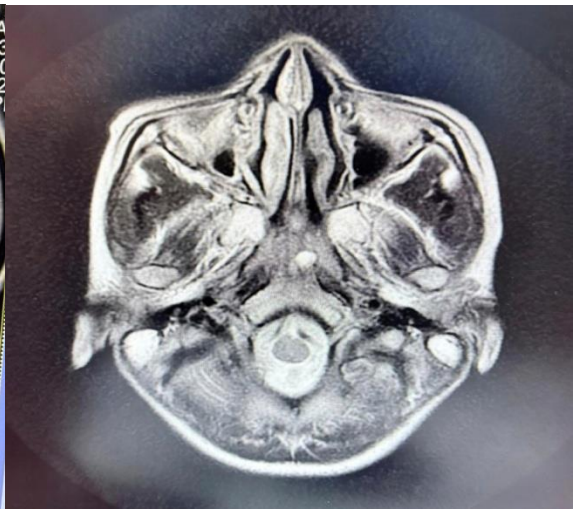

FIGURE 2

FIGURE (1,2) – SAGITTAL AND AXIAL T2 MRI BRAIN SHOWING CYST IN NASOPHARYNX CONSISTENT WITH THORNWALDT'S CYST

On detailed otorhinolaryngological evaluation, the patient denied nasal obstruction, postnasal discharge, halitosis, recurrent upper respiratory tract infections, hearing complaints, or other sinonasal symptoms. Diagnostic nasal endoscopy was performed; however, the lesion could not be clearly visualized because of its small size and superior midline location within the nasopharynx.

As the patient was completely asymptomatic with respect to the Thornwaldt cyst and there were no radiological features suggestive of infection or local complications, no intervention was undertaken for the cyst. The patient completed treatment for pneumococcal meningitis and typhoid fever, recovered without neurological sequelae, and was discharged with advice for routine follow-up.

DISCUSSION

Thornwaldt's cyst is an uncommon benign lesion of the nasopharynx that is frequently detected incidentally during radiological investigations or endoscopic examinations performed for unrelated complaints. Despite its relatively low prevalence, it is an important clinical entity because its presentation can be highly variable. While many patients remain asymptomatic throughout their lives, others may develop symptoms depending on the size, location, or secondary infection of the cyst[1,2].

The lesion originates from persistent embryological remnants in the posterior wall of the nasopharynx. In most cases, it remains small and clinically silent. However, enlargement of the cyst can lead to a variety of symptoms, including nasal obstruction, postnasal drip, halitosis, headache, neck discomfort, and Eustachian tube dysfunction[12]. Ear-related symptoms such as aural fullness, hearing impairment, and recurrent middle ear problems have also been reported, although they are less common[1,2,6].

The increasing use of nasal endoscopy and cross-sectional imaging has significantly improved the detection of different cystic lesions in nose and nasopharynx including Thornwaldt's cysts [11]. Nevertheless, a high index of suspicion is still required, particularly in patients with persistent symptoms that cannot be explained by routine clinical examination. Endoscopy remains a valuable diagnostic tool, providing direct visualization of the characteristic midline nasopharyngeal cyst[6,8].

The differential diagnosis of a nasopharyngeal mass is broad and includes adenoid retention cysts, branchial cleft cysts, meningoencephaloceles, and nasopharyngeal malignancies [10]. Therefore, careful clinical evaluation combined with appropriate imaging is essential to avoid misdiagnosis and unnecessary interventions[1,2].
Management is largely determined by the presence and severity of symptoms. Asymptomatic cysts generally require no active treatment and can be managed conservatively with observation. In contrast, symptomatic lesions are best treated surgically. Endoscopic marsupialization has become the preferred treatment modality because it is minimally invasive, provides excellent visualization of the lesion, and is associated with rapid recovery and a low recurrence rate[3,5,7,9].

CONCLUSION

In conclusion, Thornwaldt's cysts are often detected incidentally during imaging studies and may remain asymptomatic for many years. Although most cases do not require treatment, their identification warrants careful evaluation to rule out potential complications. Regular follow-up is important, particularly when there is concern for an increase in cyst size or the development of symptoms. Early recognition of symptomatic cysts can help prevent complications such as recurrent infections, postnasal discharge, or nasopharyngeal obstruction. Therefore, awareness of this condition and appropriate clinical monitoring play an important role in ensuring timely intervention and favorable patient outcomes.

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