ORIGINAL RESEARCH PAPER

Paediatric Surgery

THE RARE THIRD BRANCHIAL CYST IN PAEDIATRIC AGE GROUP

KEY WORDS: Third Branchial Cyst; Branchial Cysts; Unusual Neck Masses in Paediatric age group

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ABSTRACT

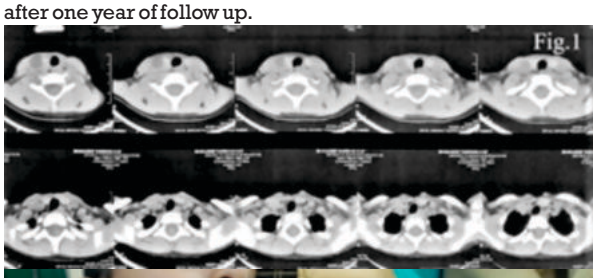
Third branchial cleft cysts are rare presentations of an abnormal persistence of the branchial apparatus during embryological development. Radiological investigations such as Computed tomography (CT scan) examination and Magnetic Resonant (MR) imaging studies help to diagnose in suspected cases. On CT scan these cysts appear as low attenuated homogeneous masses with well-circumscribed margins; on MR imaging, they demonstrate hyperintense relative to muscle on T2-weighted images. Definitive treatment is surgical excision. We present a case of a third branchial cleft cyst in 5 years old female child describing its diagnosis and treatment.

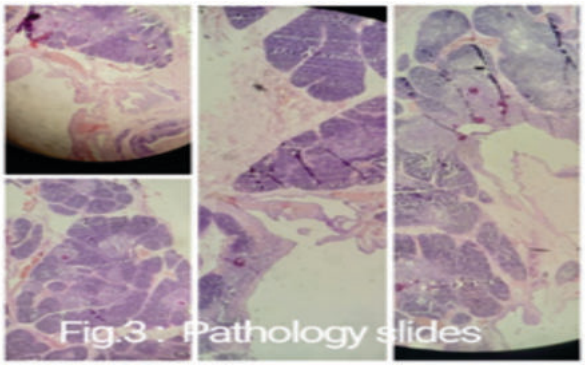
INTRODUCTION

Branchial or pharyngeal cleft anomalies are an important occurrence in paediatric neck pathology (1). Branchial cleft cysts are formed during the embryonic development. They appear as a painless, compressible lump in the neck mostly on the left side. They are found equally in both males and females. Branchial cleft cysts are typically seen in young age group but can be found in any age group or present in utero (2). Third branchial cleft cysts are amongst the rare branchial cysts representing only 2–8% of all branchial anomalies and are presented as a painless mass that develops rapidly in the neck following an infection (3). The principle of management includes early diagnosis, controlling the infection status, appropriate imaging and complete excision (4). Diagnosis can be confirmed by fine-needle aspiration cytology and the presence of a fluid-filled cyst on a CT scan, US, or MRI (5). The initial surgery is crucial since the recurrence rate after incomplete surgical excision can be as high as 22% (6). Our objective was to report a case of 5yr female with third branchial cleft cyst.

Case Report

A 5 years old girl was brought by her parents with a swelling over anterior upper aspect of neck on the right side since childhood. Her parents noticed an increase in size since the last 6 months after an episode of cough and runny nose. There were no constitutional symptoms like evening rise of temperature, night sweats, weight loss or history of tuberculosis in the family. Examination revealed a well-built, well-nourished girl with a non-tender cystic swelling of size 2.5*2.0cm on the right side of the hyoid bone (Fig.2). The swelling had vague margins and was deep to the strap muscles of the neck. The lateral border of the swelling was along the anterior border of the Sternocleidomastoid. There were no similar swellings in the neck or elsewhere and thyroid was in its normal place. Mantoux test was negative. Contrast enhanced CT scan Neck revealed a 33*23*40 mm sized lobulated septate peripherally enhancing lesion anterior to carotid space insinuating the retropharyngeal space (Fig.1). Lesion was abutting right lobe of thyroid gland, right submandibular gland and right sternocleidomastoid muscle with no e/o cervical lymphadenopathy. Exploration of neck revealed a cystic mass of size 3*3 cm deep to strap muscles extending from anterior border of right sternocleidomastoid muscle till lateral border of pharynx and lying over common carotid artery (Fig.2). The swelling was excised in toto and sent for Histopathological examination. Histopathology suggested developmental remnant of third pharyngeal pouch showing multiloculated cyst with haemorrhagic fluid lined by cuboidal epithelium (Fig.3). Cyst wall also showed traces of Hassall's corpuscles and normal parathyroid tissue. Post operative period was uneventful and discharged on Postop day 5. Patient has no complaints till date after one year of follow up.





DISCUSSION:-

Brachial malformations are a common cause of soft tissue swellings in the neck of a young adult (4). 95% of all malformations developing due to incomplete obliteration of the clefts and pouches separating each arch are arising from 2nd arch. Branchial cleft cysts are believed to be a result of failure of fusion of the second branchial arch, although some theories suggest that cystic degeneration of the first, second, and third branchial clefts or cystic degeneration of epithelial elements of cervical lymph nodes or persistence of thymo-pharyngeal ductal origin (4) (5). They are mostly asymptomatic but can present with sudden growth in size, especially after an upper respiratory tract infection and sometimes may present with signs of inflammation and abscess formation. Acute increase in size may cause obstructive symptoms such as respiratory compromise or dysphagia or even snoring, if the mass extends to adjacent structures (5). Sometimes, they develop a sinus or a fistula communicating with the sternocleidomastoid muscle or the tonsils (7). Third and fourth branchial anomalies contain thymic tissue as well as cysts and sinuses that result from thymic or parathyroid rests. Third branchial cleft cyst presents as a cyst related to the anterior body of sternocleidomastoid muscle, starting from the level of the hyoid bone can reach up to the pyriform fossa. Because of its relation to the superior laryngeal nerve, it is pushed medially and is anterior to internal carotid artery(6). Differential diagnosis of the lesion may include malignant or benign lymph nodes, malignant or benign neoplasms, inflammatory lymphadenopathy, and bacterial and viral infections.

The definitive treatment for branchial anomalies is complete surgical excision. Unresected cysts and sinuses have a high risk of infection, and the incomplete resection of these swellings may result in higher rates of recurrence (7). Dissection must carefully include the entire tract that is associated with these lesions. Detailed knowledge of the vascular anatomy and surrounding nerves is necessary for safe and complete resection for branchial cleft anomalies. It is important to perform radiological imaging to know the extent of the lesion and its relation to surrounding vital structures in the neck so as to enable complete excision of the cyst and prevent recurrence.

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