Cervical Thymic Cyst: Unusual Age and Site

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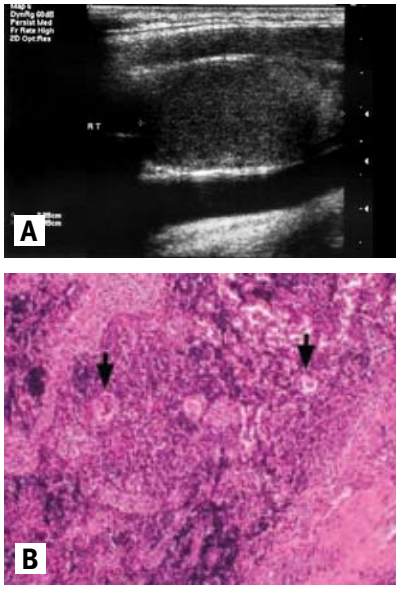
Cervical thymic cysts in the lateral neck are rare and usually become symptomatic after the age of 2 years. Heise et al. [1] reported cervical thymic cysts to be 0.3% of all congenital cervical cysts in children. Fewer than 100 cases have been reported in the English-language medical literature to date, most of them involving males under the age of 10 years old and cysts located on the left side of the neck [2,3]. One of the largest reported series included nine children from three hospitals in Italy and Greece over a period of 16 years [4] and all cysts were on the left side. The presence of a cervical mass in the neck of a child, located anterior to the sternocleidomastoid muscle, may suggest a branchial cyst, an enlarged lymph node or cystic hygroma, but a cervical thymic cyst is rarely considered. The differential diagnosis is made by imaging and fine needle aspiration. A finding of characteristic Hassall's corpuscles and cholesterol crystals is typical of these cysts. Radiological imaging is important but not histologically specific [5]. It includes computed tomography, which cannot differentiate between cervical thymic cysts and branchial cysts, and ultrasonography, which is only able to indicate the presence of a mass in the neck, anterior to the medial part of the sternocleidomastoid muscle. Surgery is usually recommended. We report an unusual case of a congenital thymic cyst on the right side of the neck in a girl older than 10 years.

PATIENT DESCRIPTION

A 15 year old girl presented in our clinic with a tender right cervical mass at the anterior triangle of the neck, on the anterior border of the sternocleidomastoid muscle. The mass was detected one month earlier and had increased in size over time. On physical examination, a 2 x 2 cm (approximately) round, tender, mobile mass was palpated on the right side at level III. The rest of the physical examination was normal and her history was unremarkable. The preoperative workup included ultrasonography, which demonstrated a hypoechogenic solid mass on the right side of the neck, measuring 2.2 x 1.7 x 2.9 cm with smooth borders [Figure A]. Fine needle aspiration showed fibrous material containing macrophages. The preoperative differential diagnosis was a branchial cyst or lymph node enlargement.



[A] Longitudinal ultrasound of the right lateral neck with an intermediate level of internal echoes demonstrating an oval mass overlying the common carotid artery.
[B] Lymphoid tissue with Hassal's corpuscles (arrows) (x 200)

Under general anesthesia, the lesion was completely excised and was found to be a hard cystic mass, with one fibrous cord tracking inferiorly and another superiorly. The mass was adherent to the common carotid artery and jugular vein. Pathological examination revealed that the specimen was partly cystic and contained yellowish-white exudative material. The large central cavity was extensively denuded, and comprised cellular debris with abundant cholesterol clefts. The fibrous wall contained smaller cysts, some lined with reactive squamous epithelium. Foci of cholesterol cleft deposition and lymphoid tissue were also seen within the wall. Close high-power examination of these foci showed scattered small squamous epithelial pearls, consistent with Hassal's corpuscles [Figure B]. A parathyroid gland measuring 4 mm was also found in the periphery of the cyst.

COMMENT

Cervical thymic cysts are rare benign lesions. No preoperative radiological test can accurately identify a neck mass as a CTC and differentiate it from other neck masses. CTC is reportedly associated with gender (male) and age (2–0 years). Cysts are usually located on the left side, anterior or below the sternocleidomastoid muscle. Ultrasound and CT of the neck are inconclusive and

CTC = cervical thymic cyst

cannot differentiate between a branchial cyst, a cystic hygroma, or a CTC. Our patient's mass was suspected of being a branchial cyst.

Preoperative CT and chest X-ray should be obtained to confirm the presence of normal or abnormal thymic tissue before surgery for suspected CTC. Intact complete surgical removal of the CTC is the treatment of choice, bearing in mind that it may be adherent to the surrounding structures, such as the vagus nerve, the internal jugular vein, and carotid artery, as well as the phrenic, hypoglossal and recurrent laryngeal nerves. About 50% of CTCs may have a fibrous connection to normal thymic tissue or active thymic cells, and removal of the duct may leave the patient athymic. This is not a problem in an adult, but a child may develop immunodeficiency problems. There have been no reported cases of myasthenia gravis following removal of a CTC in a child.

Although the cyst we describe had a classical appearance, our patient was a 15 year old girl and the lesion was on the right side – which is not only unusual, but also puts the recurrent laryngeal nerve at risk of possible surgical trauma. Therefore, special care was taken to precisely identify the recurrent laryngeal nerve, before excising the cyst.

The thymus gland reaches its relative maximum size in children aged 2–4 years, attaining its final size at puberty when it weighs 30–40 g. The gland then involutes and is replaced by fibrofatty tissue. Among several theories on the formation of such cysts, the two favored ones are the persistence of the thymopharyngeal tract (congenital theory) and the degeneration of Hassall's corpuscles within ectopic thymic remnants (acquired theory). The main bulk of the thymus develops from the ventral part of the third branchial arch, and only a relatively small portion originates from the dorsal part of the fourth branchial arch, from which the superior parathyroid also originates. The finding of parathyroid tissue in the specimen of our patient's CTC indicates a congenital etiology. Her cyst apparently originated from the dorsal part of the fourth branchial arch, from which the thymopharyngeal duct also develops.

Our Medline search failed to reveal any actual documentation of CTC in females, mentioning only that it presents "more in boys." Our case is also unique in terms of the patient's age (> 10 years old) and location of the cyst (right side of the neck).

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