Thyroglossal Duct Cyst: An Intralaryngeal Extension

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During fetal development, epithelium in the floor of pharynx evaginates and form thyroglossal tract. The duct descends in midline of neck, where its distal end becomes bi-lobed and further differentiates into thyroid gland. The non-obliteration of thyroglossal tract during development is responsible for the formation of thyroglossal duct cyst (TDC). Thyroglossal duct cysts are the most common congenital abnormality in the neck. Thyroglossal fistulæ are acquired, which occur as a result of accidental and surgical rupture of cyst. In our patient, the cystic lesion was located at the infrahyoid level and there was an intralaryngeal extension of the lesion. The intralaryngeal location of a thyroglossal duct cyst is rare and only a few cases have been reported.

Key words Thyroglossal duct cyst, infrahyoid, sisstrunk operation, intralaryngeal extension, pre-epiglottic space

INTRODUCTION

The thyroglossal tract is derived from out pouching of tongue tissue at junction of anterior two-third and posterior one third at the level of foramen caecum. Thyroglossal duct cyst (TDC) is developmental malformation, where the thyroglossal tract fails to obliterate after descent of the thyroid gland. Thyroglossal fistulæ are acquired, which occur as a result of accidental and surgical rupture of cyst. Thyroglossal duct cyst is the most common type of benign cyst encountered in the neck region. As a consequence, this can occur anywhere along the course of the tract but it commonly present as a swelling in the perihyoid area (98%). The intralaryngeal location of a thyroglossal duct cyst is rare and only a few cases have been reported (Loh, 2006; Shaari, 1994; Soliman, 2000; Pradeep, 2010).

CASE REPORT

Twenty seven year male patient presented to ENT OPD with one month history of neck swelling. The swelling was insidious in onset, gradually progressive. There was no history of pain, difficulty in swallowing and change in voice. The physical examination showed 3×3 cm soft, cystic mass in left para-median region of neck over thyroid cartilage (Fig.1). The swelling moved upwards with deglutition and protrusion of tongue. The ultrasonography of neck showed dense cystic mass in infrahyoid region without septation in left para-surgical region with extension in pre-epiglottic space. CT scan with Valsalva maneuver revealed cystic lesion with rim enhancement located over thyroid cartilage left side with extension into pre-epiglottic space through thyrohyoid membrane (Fig.2). The fine needle aspiration showed numerous macrophages with few neutrophils in mucoid background without epithelial component suggestive of benign cystic lesion. The patient was posted for Sistrunk operation under general anesthesia. Intra-operative finding, cystic lesion extended into pre-epiglottic space via thyrohyoid membrane. The cystic mass along with thyroglossal tract was removed in toto. The mass was filled with mucoid discharge.

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Other than painful swallowing for four days, the post-operative period was uneventful. The histopathology report was thyroglossal duct cyst (Fig. 3). The patient is on regular follow-up for six months and disease free.

**DISCUSSION**

During the first month of fetal development, epithelium in the floor of pharynx evaginates and form thyroglossal tract. The duct descends in midline of neck, where its distal end becomes bi-lobed and further differentiates into thyroid gland. The thyroglossal duct descent very close to hyoid bone. In approximately 30% of cases the tract has been found posterior to the hyoid bone (John, 2010). Persistence of non-obliterated thyroglossal duct is involved in the formation of TDC. The relationship of TDC with hyoid bone is also responsible for extension of cyst in pre-epiglottic space. The available literature showed that TDC arises in about 7% of the population (Mondin, 2008). It is most common midline neck swelling in childhood however; 50% of thyroglossal cysts are not diagnosed until adult life. Some kind of stimulation lead to cystic dilatation of silent tract which is responsible for
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delayed presentation. The TDC is found in between hyoid bone and the thyroid cartilage in about 60% of the patients, it is suprahypoid, supra-sternal and intra-lingual in about 24%, 13% and 2% respective patient (Ghaneim, 1997). It usually presents as swelling in neck that is painless, smooth and cystic, if infected pain can occur. The TDC with intra-laryngeal extension may present with symptoms such as difficulty in breathing and swallowing, change in voice and choking sensation where as in our patient no such symptoms (Kurien, 2012). TDC will move upwards with deglutition and protrusion of the tongue because of its attachment to the tongue via the tract. The differential diagnosis of TDC includes ectopic thyroid, lipoma, dermoid cyst, sebaceous cyst, branchial cleft cyst and enlarged lymph node, malignancy etc. An ultrasonography of neck, TDC appear as cystic lesion as seen in our case (Ahuja, 2005). Typical CT appearance of TDC is well-circumscribed, low-density lesion with peripheral rim enhancement similar to our case. Occasionally, increased attenuation, internal septations, and indistinctness of surrounding tissue planes are seen and are presumably the result of prior infection. Thyroid cartilage erosion and intralaryngeal extension are both extremely rare (Loh, 2006; Shaari, 1994; Soliman, 2000; Pradeep, 2010; Reed, 1985; Hossam, 2011; Bahar, 2010; Nicollas, 2007) Magnetic resonance imaging provides a high degree of diagnostic accuracy for TDC, but it is rarely required for the diagnosis. Although TDCs are invariably hyperintense on T2-weighted images. Histologically, the cyst is lined by stratified squamous or pseudo stratified ciliated columnar epithelium. FNA is only moderately sensitive for a preoperative evaluation of TDC.

Earlier, TDC was treated with simple excision or incision and drainage, which resulted in a high recurrence rate of 50% in patients. Treatment of choice now is Sistrunk procedure, in which body of the hyoid bone is removed with meticulous excision of the persistent duct up to the foramen caecum (Cotter, 2005). Literature reveals that Sistrunk surgery has brought down the recurrence from 50% to 3% (Brown, 1961). For thyroglossal duct cyst with extensive intralaryngeal extension, temporary tracheostomy may be required to secure airway (Quah, 2002). In our patient, the cystic lesion was located at the infrahyoid level and there was extension in infrahyoid level, which is a rare presentation of TDC.

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