

CLINICAL VIGNETTE

A Thyroglossal Duct Cyst Presenting in an Adult

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Clinical Case

A 60-year-old man presented to his primary care physician with three days of pharyngitis, subjective fever, and fatigue. His primary concern was a tender, swollen midline lump in the upper neck. Similar intermittent localized neck swelling occurred over 30 years, generally associated with upper respiratory infections and resolved without treatment within three to four days. There was tenderness with palpation associated with brushing his teeth. He reported no other masses, edema or neck tenderness. His symptoms started three days after caring for a patient hospitalized with confirmed influenza. He was up to date on influenza immunization and had not taken antiviral therapy. There were no night sweats, weight loss, hoarseness, foreign body sensation in the throat, dysphagia, or generalized lymphadenopathy. He was a non-smoker with no recent travel, contact with farm animals, ticks or cats, and no known HIV or significant TB exposures.

His past medical history was notable for hypothyroidism, well-controlled hypertension, dyslipidemia, migraine headaches, reactive airway disease, and eczema. Medications included atorvastatin, benazepril, fluticasone nasal spray, levothyroxine, and albuterol inhaler as needed.

On examination, he appeared well, was afebrile, normotensive, with normal room air oxygen saturation. Neck examination revealed a 1cm by 1cm soft midline mass in the upper neck with no other discrete nodules or masses. Oropharynx was clear, sinuses were without tenderness to palpation, and the rest of his exam was unremarkable.

The possible diagnosis of thyroglossal duct cyst was discussed with the patient and an ultrasound scheduled.

Ultrasound performed five days later noted thickened and edematous muscle fibers of the tongue, especially at the root of the neck and associated with an irregularly dilated cystic structure which had a tubular configuration, extending inferiorly to the level of the hyoid cartilage, ending in a cyst less than 1 cm in diameter. Portions of the dilated tube contained echogenic debris believed to represent inflammatory material. Smaller lymph nodes were identified at level 1 and 2 bilaterally, likely reactive in nature, with benign sonographic features. The thyroid gland was small in size with marked alteration of texture and surface lobulation. No discrete nodules were seen. Color Doppler of the thyroid showed no increased vascularity. These findings suggested a minimally segmentally dilated thyroglos-

sal duct, within thickened and edematous muscle fibers of the root of the tongue, ending in a small cyst at the level of the hyoid cartilage. The primary concern was inflammation within the partially open thyroglossal duct/cyst and MR evaluation was suggested for further assessment and anatomic delineation.

Additional imaging was ordered and referral was placed to Otolaryngology. MRI of the soft tissue of the neck revealed a nonenhancing T2 hyperintense 5mm structure at the base of the tongue abutting the hyoid bone consistent with a small thyroglossal duct cyst. The thyroid gland was again noted to be small. Thyroid function tests were within normal limits and the patient is awaiting follow up with Otolaryngology.

Discussion

Thyroglossal duct cysts (TGDC) comprise 70% of all congenital neck masses¹ making them the most common congenital neck cyst.² While the majority of thyroglossal duct cysts are diagnosed in childhood or adolescence, up to one third present in adults over age of 20,³ with some reporting 15% presenting in adults over age 50.⁴ Postmortem studies of adult larynges estimate thyroglossal duct cysts in seven percent of the general population.⁵ They are typically not hereditary nor have a male or female predominance.

Thyroglossal duct cysts are considered a remnant of embryonic development. During normal embryogenesis, the thyroid begins to develop at the level of the pharynx at three weeks gestation. It then descends into the neck via the thyroglossal duct. Thyroglossal duct cyst formation occurs if the thyroglossal duct fails to involute at 7 to 10 weeks of development.² During the descent of the duct, it passes the hyoid bone and due to this close anatomic proximity, thyroglossal duct cysts classically involve attachment to the hyoid bone. Most commonly this association is seen anteriorly, with 30% of cases attaching posteriorly.⁵ Attachment location is significant for surgical management. Since the duct tends to have multiple branches, connections with other secretory glands are commonly observed. This is significant since resection of the entirety of the thyroglossal duct is needed to prevent recurrence.²

Histologically cysts have an epithelial lining which can include squamous or pseudostratified ciliated columnar tissue, and can occasionally contain thyroid or salivary gland tissue. During

infection, inflammation of the epithelial lining can lead to secretions, resulting in acute neck edema. Additionally, radiation associated with head and neck cancers can be associated with acute increases in size. This is attributed to inflammation triggered by radiation therapy.² Radiation associated edema generally resolves after radiation therapy is completed.

Thyroglossal duct cysts typically appear as a soft, painless, mobile mass in the upper neck. They can also present as an abscess or draining sinus. While classically occurring at the midline, some develop laterally with slight predisposition to the left.⁶ Because of the association with the neck strap muscles, thyroglossal duct cysts tend to move up with swallowing or with tongue protrusion out of the mouth.² While typically asymptomatic, when associated with acute upper respiratory infections, they can become enlarged and tender, as in this case. Children may present with recurring episodes, while adults typically present for other symptoms such as pharyngitis, dysphagia, hoarseness or globus sensation.

Clinical examination should be followed by diagnostic imaging. Ultrasound is often the initial imaging and typically reveals a well circumscribed cyst with thin lining. If infected, thickening of the walls and internal debris can be seen. The presence of calcifications may indicate possible thyroglossal duct cysts carcinoma.² This is exceedingly rare with 1% of thyroglossal duct cysts found to be malignant. Magnetic resonance imaging (MRI) and Computed tomography (CT) have also been used to confirm the diagnosis and further characterize lesions size and relative location to the hyoid bone for perioperative planning. Since thyroglossal duct cysts can be associated with ectopic thyroid tissue, a radionuclide thyroid scan can differentiate thyroid tissue. Ectopic thyroid tissue typically occurs in the neck but has been reported in the heart, mediastinum, esophagus and diaphragm.⁷

After imaging, fine needle aspiration (FNA) can be performed to evaluate for malignancy and to guide antimicrobial treatment if acutely infected.

The differential for neck masses includes dermoid cysts which tend to be more superficial and can be distinguished from thyroglossal duct cysts as they lack underlying attachment to the hyoid bone. Imaging of dermoid cysts often reveals the presence of fat within the lesion.² Brachial cleft cysts, lipomas, thyroid nodules, lymphadenopathy, salivary gland tumors, and skin lesions including sebaceous cysts are also on the differential for neck masses.

Surgical resection is the mainstay of treatment for thyroglossal duct cysts. The Sistrunk procedure, developed in the early 1900s, is now largely considered the standard of care. It involves resection of the thyroglossal duct cyst including any communicating tracts to the pharynx, and resection of the midline portion of the hyoid bone and surrounding tissue. This is recommended to avoid recurrence, fistula formation (from

remnant cyst tissue), and to definitively treat for the very low risk of malignancy.

With acute infection, surgery is typically deferred until the infection has cleared. Cephalosporins, amoxicillin-clavulanate or clindamycin cover oral flora. Given the risk for recurrence, surgical resection is considered the most effective treatment. The Sistrunk procedure typically requires at least 5-7 days of recovery.

Pathology rarely reveals malignancy within the thyroglossal duct cyst with the overwhelming majority papillary carcinomas,⁵ followed by squamous cell, Hurthle cell, follicular and anaplastic carcinomas.⁵ Treatment of low risk thyroglossal duct cyst carcinoma is typically completed with resection. High risk thyroglossal duct cysts may also involve thyroidectomy and lymph node dissection. Thyroglossal duct cysts carcinomas have very low overall mortality rates.

More recently, alternative treatments including ethanol injection have been used for patients who are not surgical candidates and where there is minimal concern for carcinoma. These do not require anesthesia or hospitalization, and are well tolerated with low risk of infection, nerve injury, hemorrhage, recurrence or displeasing postoperative cosmetic appearance.²

Conclusion

Thyroglossal duct cysts are the most common congenital cysts of the neck, most often presenting in childhood or adolescence. Ultrasound, MRI or CT imaging are the mainstay of diagnosis. Currently, surgical resection is the standard treatment approach, though ethanol injection is a reasonable alternative for non-surgical candidates with low suspicion for malignancy. Although rare, thorough head and neck examination may identify this treatable finding.

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