Case Reports

Dysphagia Due to Thyroid Immobilization: Value of Real-Time Sonography

Thomas H. Shawker,1 Michael R. Paling,1 and Bruce Weintraub2

Hashimoto thyroiditis is an autoimmune disease of unknown etiology characterized by lymphocytic infiltration and functional failure of the thyroid gland. Patients with this disease usually have complaints referable to gland enlargement and hypothyroidism. Dysphagia is an uncommon complaint, but may occur if the gland becomes enlarged and impinges on the esophagus or when normal cephalad movement of the thyroid is impaired during swallowing. Impaired movement is present if the gland is immobilized by an inflammatory reaction that binds the thyroid to the surrounding neck fascia. Inflammatory fixation of the thyroid can be suggested as the cause for dysphagia when real-time sonography demonstrates an absence of normal thyroid movement during swallowing.

Case Report

A 63-year-old woman had persistent anterior neck pain, thyroid enlargement, and dysphagia that arose during treatment with prednisone for postoperative pericarditis. Initial evaluation showed decreased radioactive iodine uptake of 2% at 24 hr with a T4 of 12 mg/dl, and a sedimentation rate of 83/hr. Physical examination revealed a tender thyroid gland that was twice normal size on the right and 1½ times normal size on the left. Barium swallow to investigate the dysphagia showed a normal cervical esophagus without obstruction. Neurologic examination, radiography of soft-tissues of the neck, and a computed tomography head scan were also normal.

Static B-scan sonography using a 5 MHz SIF transducer 9 months later revealed a slightly enlarged gland with normal internal architecture (fig. 1). On real-time examination with a mechanical sector scanner (fig. 2) there was markedly decreased cephalad movement of the thyroid on swallowing, the gland moving less than half a centimeter. Swallowing was completed with considerable difficulty and discomfort.

At 15 months after initial examination, eight separate aspirations of the thyroid, using both a fine-needle and Vim-Silverman needle, yielded only skeletal muscle and fibrous tissue. Surgery was initially avoided in view of the patient's cardiac history. However, because of persistent neck pain and dysphagia which was unresponsive to salicylates or steroids, and the lack of a tissue diagnosis, a total thyroidectomy was performed. At surgery, a large irregular firm thyroid gland was removed with difficulty because of extensive surrounding fibrosis. The gland was adherent posteriorly to the prevertebral musculature and fascia and anteriorly to the strap muscles. Pathologic examination of the 47 g thyroid showed diffused lymphoplasmacytic infiltration with occasional germinal centers. Moderate fibrosis was also present within the gland. The final pathologic diagnosis was Hashimoto thyroiditis. Postoperatively, the neck pain and dysphagia immediately and completely disappeared and at 2 year follow-up, she was asymptomatic.

Discussion

Oropharyngeal dysphagia may result from thyroid disease. It occurs when the thyroid gland enlarges and compresses the pharyngoesophageal junction or when normal thyroid movement with swallowing is prevented [1]. Anatomically, the pretracheal fascia covers the sides and front of

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1Department of Diagnostic Radiology, NIH, The Clinical Center, Bldg. 10, Room 6S211, Bethesda, MD 20205. Address reprint requests to T. Shawker.
2National Institute of Arthritis, Metabolism, and Digestive Diseases, Clinical Endocrinology Branch, NIH, Bethesda, MD 20205.
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Fig. 1.—Longitudinal static B-scan. Entire right lobe of thyroid gland (arrowheads) appears structurally normal.

Fig. 2.—A. Real-time transducer scans thyroid longitudinally. B. Patient’s neck and position of scanner recorded from ceiling-mounted television camera and electronically incorporated with sonogram into composite image [8]. Mid and lower parts of right lobe visible (arrows). Study was performed with 3.5 MHz mechanically-sectoring transducer. Higher frequency transducers in sector or linear array scanners now provide better thyroid detail.

the trachea and then divides laterally to enclose the thyroid gland and cartilage. As a result of this fascial envelopment and attachment to the thyroid cartilage, the thyroid gland normally rises and falls during swallowing [2]. If the thyroid is fixed in position, movement cannot occur and normal elevation and anterior rotation of the larynx that occurs with swallowing is impaired. Any disease process that transgresses the capsule of the thyroid gland to involve the surrounding tissues may result in thyroid fixation. Fixation may be caused by local invasion of thyroid cancer, scarring from thyroid or parathyroid surgery, or thyroiditis when the inflammatory process extends beyond the capsule into the surrounding tissues [3]. Inflammatory fixation and dysphagia occur more often in Riedel thyroiditis but may be seen in other forms of thyroid inflammatory disease [4–6].

While thyroid movement is usually assessed by physical examination, obesity, neck scarring, a large gland, or tenderness may frustrate examination and create confusion with true fixation. Whereas static B-scanning is only useful for revealing structural detail [7], real-time scanning demonstrates movement. Scanning of the thyroid to evaluate mobility is best performed in the sagittal plane with the patient either supine or sitting upright. Because of the intervening air-filled trachea, the right and left lobes must be evaluated independently. Movement of the gland is assessed by observing either the right or left lobe continuously with real-time scanning while the patient drinks water. During swallowing, the normal thyroid lobe moves cephalad about 2 cm within a stationary compartment formed by the nonmoving sternocleidomastoid muscle anteriorly and prevertebral muscles posteriorly. After a single swallow is completed, the lobe returns to its resting position.

In our patient, although the mildly enlarged gland appeared structurally normal on static B-scanning, the lack of normal movement on real-time scanning suggested preoperatively that inflammatory fixation of the gland caused her dysphagia. Sonographic assessment of thyroid mobility was found useful in this case because local pain and tenderness made palpation difficult. Although the cause of her severe inflammatory reaction is not known, it was probably related to the infectious and/or autoimmune process that caused her postoperative pericarditis. Real-time sonographic examination of thyroid mobility may be useful in the investigation of dysphagia, especially when other studies such as the barium swallow are normal and there is a history of thyroid disease.

REFERENCES

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