Correlations between ultrasonography performed by the ENT specialist and pathologic findings in the management of three cases with thyroglossal duct cyst

Daniela Vrinceanu1, Mihai Dumitru1,2, Romica Cergan2, Alina Georgiana Anghel3, Elena Tatiana Patrascu3, Caius Codrut Sarafoleanu3, Adrian Costache4

1ENT Department, Bucharest University Emergency Hospital, 2Anatomy Department, “Carol Davila” University of Medicine and Pharmacy, 3ENT Department, “Saint Mary” Clinical Hospital, 4Ultrasound Teaching Center, “Carol Davila” University of Medicine and Pharmacy, Bucharest, Romania

Abstract

Thyroglossal duct cyst (TDC) has an increasing incidence. We present a series of three cases that benefited from the use of ultrasonography performed first hand by the ENT specialist. All cases underwent Sistrunk procedure and the diagnosis was confirmed by pathology results: one uncomplicated TDC, a thyroglossal duct carcinoma, and an infected TDC with the risk of becoming a diffuse cervical suppuration. Ultrasonography performed first hand by the ENT specialist enables a quick and thorough planning of the surgical procedure and management of the case.

Keywords: ultrasound; ENT; thyroglossal duct cyst

Introduction

One of the most common types of developmental cyst encountered in the neck region is the thyroglossal duct cyst (TDC) and is credited with a 7% incidence in the general population, 1% of the cases being associated with malignancy [1]. However these epidemiological data are somewhat challenged lately by a sudden surge in the number of patients presenting with this condition. We present three cases with TDC managed by ENT specialists in a tertiary targeting to increase the awareness of ENT specialists regarding the rising number of patients with TDC. All cases underwent endocrinology consultation with subsequent blood analysis of thyroid hormones and Sistrunk surgery for the removal of the mass with subsequent pathology diagnosis.

Cases report

All the ultrasound examinations were performed using a Sonoscape S2 ultrasound machine with a 10 MHz linear probe, and the patients were examined in a supine position with the neck in slight extension.

Case 1
A 41 year old male presented with an anterior cervical mass with a lengthy evolution. The patient actually showed us older family pictures where the mass was present and other images in which it had disappeared. The current episode differed from the previous ones as it featured associated pain and did not resolve for 3 weeks at least. At ultrasound examination a classic TDC was found together with inflammatory jugular lymph nodes (up to 7 mm in diameter) (fig 1). We performed a complete surgical removal followed by confirmation by the pathologist.

Case 2
A 25 year old male presented with an anterior cervical mass which appeared 2-3 months ago and had became
painful in the last week, with no amelioration under anti-inflammatory and antibiotic treatment. Ultrasound examination performed by the ENT specialist revealed an anterior cervical mass situated superficially almost fixed to surrounding tissue (fig 2). The TDC extended through the thyro-epiglottic membrane causing stridor, continued anterior to the entire length of the thyroid cartilage and ended abruptly with a thickened wall just above the thyroid isthmus and cricoid cartilage. The pathologist ruled that this blunt thickened ending contained a papillary thyroid carcinoma and the patient was referred to the Endocrinology Institute for further treatment.

Case 3

A 27 year old male patient presented with an anterior cervical mass with previous episodes of manifestation that had been overlooked by self medication with antibiotics and anti-inflammatory medicines. Figure 3 shows in the upper image the extension of the tract till the base of the tongue; the presence of the tract is visualized in the middle image in a longitudinal view and going downwards towards an anterior subtegumentary cervical mass. Sistrunk procedure confirmed the presence of a complex TDC plunging from the level of the base of the tongue through the hyoid bone and superior of the thyroid gland. It required sectioning of the hyoid bone and closure at the level of the base of the tongue through a combined endoscopic approach. Pathology results confirmed the presence of an infected TDC.

Discussions

Alarming is the fact that many of the cases reported recently had a papillary neoplasm associated at the level of the TDC [2] such as in the second case we presented. Moreover, these are reported complex cases with unusual presentations such as submental-intralingual [3], in hyoid bone [4], or intralaryngeal [5] as in the third case we presented. Often TDC is discovered as infected [6] or as giant cervical masses [7] causing stridor, as in our second case, or obstructive sleep apnea [8]. There are cases presenting simultaneous cysts [9] and synchronous tumors [10]. Till now there are many management dilemmas concerning TDC that need answers [11] but in general practice the investigation sequence of a TDC involves ultrasonography [12] followed by CT [13] (if needed) and FNAC [14] prior to Sistrunk operation [15] with possible associated thyroidectomy in cases of malignancy [16]. These are all arguments for ultrasound examination performed firstly by the ENT surgeon in order to expedite the correct management and treatment of TDC cases. In simple cases it will prevent the use of further imaging studies such as CT and MRI and in complex cases will

Fig 1. a) Transverse scan over the neck midline, color Doppler ultrasound. A thyroglossal duct cyst with hypoechoic, inhomogenous, and a vascular content was found; b) surgical view with the resection piece.

Fig 2. a) Longitudinal view of a thyroglossal duct cyst plunging over the superior border of the thyroid cartilage (marked by the red dotted line). The yellow arrow points to the continuations of the duct downwards, towards the thyroid isthmus; b) transverse view of the blunt ending of the duct with thickened walls above the thyroid isthmus (the cricoid cartilage is marked by the red dotted circular line).

Fig 3. a) Transverse view at the level of the tongue base; b) longitudinal midline view of the thyroglossal duct cyst extending through the hyoid bone; c) transverse view through the body of the cyst.
enable their insertion on a fast track in order to access these imaging studies quicker.

**Conclusions**

In these three cases, the ultrasonography examination performed first hand by the ENT specialist enabled a quick preparation of the surgical procedure and real time visualization of possible risks and intraoperative incidents and accidents such as a complete extension of the TDC from the base of the tongue through the hyoid bone till the thyroid gland. Ultrasonography has many advantages as primary imaging solution being cheap, nonirradiating, fast and permits the serial examination of the patient.

**References**