

Thyroglossal tract remnants with a cyst in an adult cadaver

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Abstract

Although thyroglossal tract remnants are not uncommon in adults, it is still important due to the carcinomatous involvement. We found a case of thyroglossal tract remnants with a cyst formation in a 37-year-old Korean male cadaver during a routine dissection course, whose cause of death was rectal carcinoma. A left-deviated thyroglossal duct cyst was located thyrohyoid level and thyroglossal tract remnants connected below and above, behind the hyoid bone, the cyst. In addition, we examined the possible involvement of carcinoma in thyroglossal duct cyst histopathologically, but found it a simple cyst containing respiratory epithelium and thyroid follicles. These results indicated that clinicians should keep in mind the possibility of carcinomatous change with thyroglossal duct cyst in adult patients over fourth decades, although the prevalence is very low. (J Med Life Sci 2013;10(1):36-38)

Key Words : Adult, Embryology, Neoplasia, Thyroglossal duct cyst

Introduction

Clinicians frequently encounter adult patients with a neck mass of various causes such as congenital/developmental anomalies, infection/inflammation, trauma, toxic, endocrine, neoplasm, and systemic diseases¹⁾. These masses may be confused with thyroglossal tract remnants due to their location and character²⁾. Thyroglossal duct cyst (TGDC) is the most common congenital neck anomaly³⁾, which usually presents as a midline cystic mass close to the hyoid bone.

In general, the signs related to the presence of thyroglossal tract remnants that appear during childhood can be treated surgically. However, the tract may lie dormant for years or decades until some stimuli lead to cystic dilatation. As a result, TGDC can be observed about 7% of the adult population³⁾ or cadaver⁴⁾. We herein report a rare case of TGDC in an adult cadaver, since the vast majority of TGDCs were diagnosed before the age of 30⁵⁾.

Case Report

During a routine dissection at Jeju National University

Medical School in 2012, a case of TGDC was observed in a 37-year-old Korean male cadaver, whose cause of death was 'rectal carcinoma'. The protocol for the current report did not include any specific issue that needed to be approved by the ethics committee of our institution and it conformed to the provisions of the Declaration of Helsinki in 1995.

Gross dissection was performed in the customary fashion. During dissection on the neck we found thyroglossal duct remnants, which had off-midline components embedded in the sternohyoid and sternothyroid muscles. TGDC (Fig. 1A) was located in front of the thyroid cartilage, left-sided thyrohyoid or infrahyoid level (between the hyoid bone and the thyroid cartilage). Thyroglossal tract remnants extended upward from the cystic structure to the hyoid with a few branches and a small cyst (0.4x0.2cm), and did not have connection with the thyroid gland after tapering below the TGDC.

The excised TGDC was uniloculated and measured 2.0x1.0x0.6cm. Some skeletal muscle was attached to the outer surface. On section, the cystic cavity contained light brownish turbid fluid. Microscopic examination (Fig. 1B) revealed a complex cystic structure lined by respiratory epithelial cells (Fig. 1B1). Also noted were some thyroid follicles in the surrounding fibromuscular tissue (Fig. 1B2). Each follicle was filled with condensed colloid material and lined by a single layer of benign cuboidal epithelium. There was no evidence of carcinomatous change or metastatic adenocarcinoma.

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Figure 1. Photograph (A) of the thyroglossal tract remnants (arrows) with a cyst formation (asterisk). Micrographs (B) showing a complex cystic structure lined by respiratory epithelium (B1) and some thyroid follicles in the surrounding soft tissue (B2). SCM, sternocleidomastoid muscle; SH, sternohyoid muscle; TH, thyrohyoid muscle

Discussion

Thyroglossal tract remnants may be found of diverse clinical presentations, since it can be situated anywhere along the developmental tract as traced in a cadaveric study⁶. The majority of TGDCs occur in close proximity to the hyoid bone, but infrahyoid, left-deviated TGDC is more frequent in adults^{6,7} just like this case. We found the TGDC with thyroglossal tract remnants below and above with a small cyst behind the hyoid bone in an adult cadaver. In addition, we examined the possible involvement of carcinoma histopathologically, but found it a simple cyst.

The Sistrunk's procedure is the treatment of choice for removal of the TGDC⁸ in continuity with the mid-portion of the hyoid bone and with a core of tissue towards the foramen cecum. Successful treatment requires an understanding of the embryology and anatomy of the tongue, the thyroid gland and the hyoid bone⁹. The primitive thyroid gland develops mainly from an invagination of the endodermal cells of the ventral floor of the primitive pharynx just between the copula and the tuberculum impar. During its downward movement in the midline, anterior to the hyoid bone, the gland leaves behind an epithelial tract, known as thyroglossal tract. The thyroglossal tract usually atrophies and disappears between the 5th and 10th

gestational week⁶. As a consequence, TGDC can be located at any site along the pathway of descent of the thyroid anlage, and the failure of this tract to close predisposes the formation of a cyst^{7,8}. Usually the vertical location of TGDCs is described as lingual, suprahyoid, thyrohyoid or suprasternal⁹.

An important consideration is that approximately 1% of adult TGDC contain carcinoma foci^{5,7,9}, since 80% of neck masses are associated with a neoplastic process for patients over 40 years¹¹. Neoplastic lesions, benign or malignant, in TGDCs are unusual⁹, but present most commonly in the fourth decade of life¹⁰. TGDC carcinoma is generally either of thyroid or squamous cell origin: papillary carcinoma (80%) is the most common type, followed by mixed papillary follicular carcinoma (8%) and squamous cell carcinoma (6%)⁹. There is an agreement that the minimum treatment for a TGDC carcinoma is a Sistrunk's procedure¹⁰. Because the clinical presentation of TGDC neoplasia is very similar to that of a TGDC, it is usually discovered incidentally during pathological examination of the TGDC specimen. In this context, we examined the TGDC histopathologically and found it had nothing to do with TGDC carcinoma or metastasis from rectal carcinoma which is the cause of death in this cadaver. Nevertheless, TGDC should be a part of the clinician's differential diagnosis when presented with

a neck mass in adult patients.

In conclusion, we report untreated TGDC in a Korean male cadaver regardless of carcinomatous involvement. But, clinicians should remember whether a normal thyroid gland exists in its original location before operation, since TGDC may rarely contain the only functional thyroid tissue in adults⁷⁾. In addition, clinicians should check the histopathological results postoperatively, since clinical presentation of TGDC carcinoma is often similar to a benign cyst⁹⁾.

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