Triple ectopic thyroid

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INTRODUCTION

Ectopic thyroid gland is an uncommon embryological aberration characterised by the presence of thyroid tissue in a site other than in its usual pre-tracheal region. It occurs along the path of descent of the developing thyroid primordium from the foramen cecum. It most commonly presents itself as a lingual thyroid. There have been cases reported of dual ectopia,¹ but we hereby report a case of triple ectopic thyroid in lingual (at the foramen cecum), sublingual (between the geniohyoid and mylohyoid muscles), and just below the hyoid bone level in a 16-year-old female patient.

CASE REPORT

A 16-year-old girl presented with a gradually increasing anterior midline neck swelling (Figure 1). The size of the mass at of presentation was approximately $3 \times 2.5 \text{ cm}^2$ on palpation. It was firm in consistency, non-tender, situated at the level of thyroid cartilage and was moving freely with deglutition. Based on these findings, possibility of thyroglossal cyst was considered. An ultrasonography of neck performed by 10 MHz linear transducer which showed a soft tissue mass approximately $3 \times 2.5 \times 2.8 \text{ cm}^3$ having heterogeneous echogenicity with low level echoes higher than that of the surrounding muscle just below hyoid bone suggestive of thyroid tissue and no thyroid gland was seen at the normal position. Patient was found to be euthyroid and the thyroid function tests were normal. Plain and contrast (Figures 2–4) computed tomography (CT) scan of neck was done which revealed well defined hyperdense homogenously enhancing soft tissue density lesions at three levels measuring approximately $1.0 \times 0.9 \times 0.9 \text{ cm}^3$, $1.6 \times 1.4 \times 1.2 \text{ cm}^3$, and $2.7 \times 2.1 \times 1.5 \text{ cm}^3$, at the lingual foramen cecum level, at sublingual (between the geniohyoid and mylohyoid muscles),

and third just below the hyoid bone level, respectively. Subsequent 3 mCi technetium scan (Figure 5) revealed three foci of tracer concentration in the region of hyperdense foci on CT images. Retrospective oral examination revealed a subtle surface protrusion in midline just behind the foramen cecum. The patient was advised follow-up, but was lost for follow-up. The patient had originally been scheduled for surgery under the impression of thyroglossal duct cyst; however, a pre-operative CT scan of neck and thyroid scans revealed the presence of triple ectopic thyroid, thus preventing unnecessary surgery.

DISCUSSION

Ectopic thyroid refers to thyroid tissue that is found in a location other than its typical paratracheal position. Embryologically, the thyroid gland develops as a diverticulum from the foramen cecum, migrates anterior to the developing hyoid bone, and descends into the inferior aspect of the neck. This pattern of descent explains the occasional presence of thyroid in abnormal locations. Excessive descent can result in a substernal thyroid. Lingual thyroid is the result of defective migration of the thyroid anlage occurring between third week and seventh week of gestation. For majority of the aetiopathology of thyroid ectopia remains unclear. The most common location of ectopic thyroid gland is at the base of the tongue, just posterior to the foramen cecum.² The other extralingual sites for ectopic thyroid gland

Figure 1 Photograph of patient neck showing midline swelling.

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Figure 2 Axial non-contrast computed tomography images showing hyperdense foci at (A) lingual (at the foramen cecum), (B) sublingual (between the geniohyoid and mylohyoid muscles), and (C) at and just below the hyoid bone level.

Figure 3 Axial contrast computed tomography images showing intensely enhancing hyperdense foci at (A) lingual (at the foramen cecum), (B) sublingual (between the geniohyoid and mylohyoid muscles), (C) just below the hyoid bone level, and (D) non-visualisation of normal thyroid gland.

Figure 4 Sagittal computed tomography image showing hyperdense foci at three different levels, lingual foramen cecum level, at sublingual (between the geniohyoid and mylohyoid muscles) and third just below the hyoid bone level.

include sublingual, higher or lower cervical, laryngo-tracheal, mediastinum, and even in the abdomen.³ This abnormality is due to abnormal embryologic development and/or migration of the gland. A somatic mutation of the transcription factor

responsible for thyroid migration could explain these findings. Thus, thyroid tissue can be entirely or partially located at the base of the tongue. The spectrum of thyroid dysgenesis (developmental abnormalities) includes ectopically placed thyroid gland in addition to agenesis or hypoplasia and it is usually associated with congenital hypothyroidism.⁴ Mutations in thyroid transcription factor 2, which is required for downward migration of the thyroid gland, has been proposed as possible mechanism.⁵ In most of the cases of ectopic thyroid, up to 75% of patients may have no functioning thyroid tissue in the neck.⁶ As a result if the tissue at the base of tongue is not recognised as thyroid and is resected, the patient may become acutely and severely hypothyroid.⁷ On non-contrast CT images the ectopic thyroid tissue appears hyperdense due to its iodine content. Avid enhancement is seen following contrast administration. Therefore, thyroid scan, along with either neck CT or neck ultrasonogram, should be performed routinely to avoid unnecessary surgery if the clinical picture is at all compatible with thyroid ectopia. The majority of the thyroid cases of the ectopia are euthyroid and asymptomatic, but obstructive symptoms and hypothyroidism has been observed.⁸ Few cases of dual ectopic thyroid have been reported. Triple ectopic thyroid is a rarer entity and only few cases have been reported.⁹

Figure 5 Radionuclide 3 mCi technetium scan revealed tracer uptake at three different levels other than the normal thyroid gland region.

CONFLICTS OF INTEREST

None identified.

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Journal scan

Eastridge BJ, Salinas J, Wade CE, Blackbourne LH. Hypotension is 100 mmHg on the battle field. *Am J Surg* 2011;202:404–408.

Historically, emergency physicians and trauma surgeons have referred to a systolic blood pressure (SBP) of 90 mmHg as hypotension. Recent evidence from the civilian trauma literature suggests that 110 mmHg may be more appropriate based on associated acidosis and outcome measures. In this analysis, the authors from Trauma and Surgical Critical Care, US Army Institute for Surgical Research, Fort Sam Houston, TX 78234-6315, USA sought to determine the relationship between SBP, hypoperfusion, and mortality in the combat casualty. A total of 7,180 US military combat casualties from the Joint Theatre Trauma Registry from 2002 to 2009 were analysed with respect to admission SBP, base deficit, and mortality. Base deficit, as a measure of hypoperfusion, and mortality were plotted against

10 mmHg increments in admission SBP. By plotting SBP, baseline mortality was <2% down to a level of 101–110 mmHg, at which point the slope of the curve increased dramatically to a mortality rate of 45.1% in casualties with an SBP of 60 mmHg or less but >0 mmHg. A presenting SBP of 0 mmHg was associated with 100% mortality. The data also established a similar effect for base deficit with a sharp increase in the rate of acidosis, which became manifest at an SBP in the range of 90–100 mmHg. The authors concluded that an SBP of 100 mmHg or less may be a better and more clinically relevant definition of hypotension and impending hypoperfusion in the combat casualty. One utility of this analysis may be the more expeditious identification of battlefield casualties in need of lifesaving interventions such as the need for blood or surgical intervention.

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