Lithium-induced enlargement of a lingual thyroid

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ABSTRACT
Lingual thyroid is a rare developmental anomaly. It is the result of failure of the thyroid to descend from the foramen caecum to its prelaryngeal site. Lithium is a known goitrogen, but has never been reported to cause symptomatic enlargement of the lingual thyroid. We describe a 40-year-old woman, who presented with a foreign body sensation and progressive dysphagia caused by an ectopic lingual thyroid tissue measuring 4 cm x 3 cm x 3.5 cm. She had been taking lithium for treatment of bipolar disorder and had hypothyroidism. Her symptoms were relieved after excision of the ectopic thyroid tissue.

Keywords: dysphagia, ectopic thyroid, goitrogen, lithium, lingual thyroid, thyroid gland.

INTRODUCTION
Lingual thyroid is a rare congenital anomaly caused by the failure of the thyroglossal duct to migrate from the foramen caecum to the usual prelaryngeal site. Lingual thyroid occurs in one in 100,000 individuals; but the true incidence is not known, since many patients are asymptomatic until later on in life, or cases are not presented for medical treatment. We report a woman who developed symptomatic enlargement of lingual thyroid, after taking lithium for treatment of bipolar disorder. On investigation, it was found that the lingual thyroid was the only functional thyroid tissue present. To the best of our knowledge, there is no report in literature in which an enlarged lingual thyroid occurred after intake of lithium. The literature is reviewed regarding the incidence and diagnosis of lingual thyroid, with possible treatment options discussed.

CASE REPORT
A 40-year-old woman was referred to us from the psychiatry department of our hospital. She had an eight-month history of a foreign body sensation at the back of her tongue and progressive dysphagia. She had been taking lithium carbonate for two years for the treatment of bipolar disorder. Oropharyngeal examination revealed a mass of 4 cm x 3 cm on the posterior third of the tongue, posterior to the circumvallate papillae. The overlying mucosa was regular and there was no palpable cervical lymph node.
Lithium inhibits thyroid function, leading to clinical hypothyroidism. Patients have an elevated TSH level during treatment, and approximately 30% of patients receiving lithium will have an elevated TSH level through interference with adenylate cyclase. Lithium also blocks thyroid-stimulating effects on the thyroid, iodination of tyrosine and release of thyroid hormones. It also blocks thyroid-stimulating effects of TSH through interference with adenylate cyclase. Approximately one-sixth of these will go on to develop frank hypothyroidism. Radionuclide technetium-99m and iodine-131 thyroid scans are the most important methods for diagnosis of ectopic lingual thyroid tissue. Radiological investigations, such as grey-scale ultrasonography, CT and magnetic resonance imaging, have improved the presurgical evaluation of such cases. Although the normal thyroid gland shows more enhancement, fine-needle aspiration cytology of the mass is accurate for diagnosis.

Treatment of ectopic thyroid depends on the clinical presentation, such as size and presence of symptoms. Euthyroid and asymptomatic patients are followed-up regularly. If the patient is hypothyroid, symptoms may be treated with supplemental thyroxine. Thyroxine suppresses TSH stimulation and minimises goitrous enlargement. Indications of surgery include severe obstructive symptoms and complications, such as ulceration, bleeding, cystic degeneration, or malignancy. Many surgical approaches have been reported. The transoral route, despite being criticised for providing limited exposure, is effective for small lesions. The decreased postoperative morbidity achieved is enhanced by using the CO₂ laser. Other surgical approaches include the lateral pharyngotomy, suprahypophyseal and transhypophyseal techniques, and for larger lesions, the midline mandibular split. All afford greater exposure and control of haemostasis. Postoperative thyroxine replacement is required in patients in whom lingual thyroid is the only functional thyroid tissue. Lingual thyroid ablation with radioactive iodine-131 is an alternative method of treatment. Its disadvantages are: slow response to medication, fibrosis and dependence on lifelong thyroid hormone replacement. It is reserved as an alternative to surgery, for those unfit for surgery or who refuse surgery.

DISCUSSION

The incidence of lingual thyroid is greatest in the third decade of life. It is three to four times more common in females. 90% of all ectopic thyroid tissues are found in the tongue. Ectopic lingual thyroid may be the only functioning thyroid tissue in approximately 70% of patients. The majority of these glands reveal histological normal thyroid tissue. Most patients are asymptomatic. The symptoms include cough, pain, dyspnoea, dysphonia, dysphagia, and haemorrhage. Respiratory obstruction and hemorrhage may be life-threatening. The symptoms most commonly occur during puberty, pregnancy or menopause, when raised levels of TSH cause hypertrophy of the gland. All disorders affecting thyroid glands in normal positions, such as thyroid adenoma, hyperplasia, inflammation and carcinoma, can also affect the ectopic thyroid glands.

Lithium inhibits thyroid function, leading to clinical hypothyroidism and goitre. It is believed to increase antithyroid antibodies, and inhibits iodine uptake into the thyroid, iodination of tyrosine and release of thyroid hormones. It also blocks thyroid-stimulating effects of TSH through interference with adenylate cyclase. Approximately 30% of patients receiving lithium will have an elevated TSH level during treatment, and approximately one-sixth of these will go on to develop frank hypothyroidism. Radionuclide technetium-99m and iodine-131 thyroid scans are the most important methods for diagnosis of ectopic lingual thyroid tissue. Radiological investigations, such as grey-scale ultrasonography, CT and magnetic resonance imaging, have improved the presurgical evaluation of such cases. Although the normal thyroid gland shows more enhancement, fine-needle aspiration cytology of the mass is accurate for diagnosis.

TREATMENT OF ECTOPIC THYROID DEPENDS ON THE CLINICAL PRESENTATION, SUCH AS SIZE AND PRESENCE OF SYMPTOMS. EUTHYROID AND ASYMPTOMATIC PATIENTS ARE FOLLOWED-UP REGULARLY. IF THE PATIENT IS HYPOTHYROID, SYMPTOMS MAY BE TREATED WITH SUPPLEMENTAL THYROID. THYRAXINE SUPPRESSES TSH STIMULATION AND MINIMISES GOITRous ENLARGEMENT. INDICATIONS OF SURGERY INCLUDE SEVERE OBSTRUCTIVE SYMPTOMS AND COMPLICATIONS, SUCH AS ULCERATION, BLEEDING, CYSTIC DEGENERATION, OR MALIGNANCY. MANY SURGICAL APPROACHES HAVE BEEN REPORTED. THE TRANSORAL ROUTE, DESPITE BEING CRITICISED FOR PROVIDING LIMITED EXPOSURE, IS EFFECTIVE FOR SMALL LESIONS. THE DECREASED POSTOPERATIVE MORBIDITY ACHIEVED IS ENHANCED BY USING THE CO₂ LASER. OTHER SURGICAL APPROACHES INCLUDE THE LATERAL PHARYNGOTOMY, SUPRAHYPOPHYSEAL AND TRANSHYPOPHYSIAL TECHNIQUES, AND FOR LARGER LESIONS, THE MIDLINE MANDIBULAR SPLIT. ALL AFFORD GREATER EXPOSURE AND CONTROL OF HAEMOSTASIS. POSTOPERATIVE THYRAXINE REPLACEMENT IS REQUIRED IN PATIENTS IN WHOM LINGUAL THYROID IS THE ONLY FUNCTIONAL THYROID TISSUE. LINGUAL THYROID ABLATION WITH RADIOACTIVE IODINE-131 IS AN ALTERNATIVE METHOD OF TREATMENT. ITS DISADVANTAGES ARE: SLOW RESPONSE TO MEDICATION, FIBROSIS AND DEPENDENCE ON LIFELONG THYROID HORMONE REPLACEMENT. IT IS RESERVED AS AN ALTERNATIVE TO SURGERY, FOR THOSE UNFIT FOR SURGERY OR WHO REFUSE SURGERY.

REFERENCES