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Original Article

Ectopic Thyroid Incidence with its Hormonal Assessment

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Abstract

Ectopic thyroid tissue has been found from the tongue to the diaphragm. Ninety percent of the reported cases of ectopic thyroid are found in the base of the tongue

Total numbers of 1895 cases were included in this study. Patients were sending to CNMU-Rajshahi during the period of January'2006 to June 2009 for thyroid scanning as well as evaluation of thyroid functional status. Radio-active iodine drink / Tc^{99m} pertachnatate I/V were given to the patients for thyroid scan.

Biochemical analyses were done for the ectopic thyroid patient. Among them 17.85% patients had hypothyroidism.

Only 1.5%(28) patients have diagnosed as *ectopic thyroid* majority of the cases had lingual thyroid (10), sub-lingual thyroid in 06, over cricoid cartilage in 05 and others were seen in sub-mandibular and sub-mental region.. This study aims to find out the incidence of ectopic thyroid tissue and its functional status.

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Introduction

Ectopic tissue is normal tissue that is found in a part of the body where it is not usually meant to be. When thyroid tissue is placed other than the normal anatomical position then it is called as *ectopic thyroid*.[1]

Ectopic thyroid tissue has been found from the tongue to the diaphragm. Ninety percent of the reported cases of ectopic thyroid are found in the base of the tongue[2]

Other places are in the midline position of the upper neck (*sub-lingual or sub-hyoid thyroid*), inside the thoracic cavity (*anterior and posterior mediastinal goitre*) and in the ovarian tumor (*struma ovarii*). Failure to recognize and diagnose the lingual or sub-lingual thyroid swelling may leads to inadvertent excision and permanent hypothyroidism requires life long thyroid replacement. [3]

Material and Methods

Total number of 1895 cases was included in this study. Patients were sending to CNMU-Rajshahi during the period of January'2006 to June 2009 for thyroid scanning as well as evaluation of thyroid functional status.

Radio-active iodine drink/Tc^{99m} pertachnatate I/V were given to the patients for thyroid scan.

Before injection and ingestion of radioactive substance history taking and clinical examination of the patients were done.

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High resolution USG was also done in each and every patient.

Thyroid scan was performed by using single head Gamma camera with pin hole collimator and Dual Head SPECT camera with low energy parallel hole collimator.

Thyroid hormone status was evaluated by the measurement of serum T3, T4 & TSH level or FT3, FT4 levels.

Discussion

Thyroid gland is one of the important endocrine gland of our body. The normal gland weight is 20-25 gm.[4] The 1st endocrine gland to appear during embryonal life is thyroid gland commencing its development at around 3rd weeks of gestation. It arises as a midline endodermal swelling from the primitive pharynx between the first and 2nd branchial arches just caudal to the tongue bud. The developing gland then descends into the neck connected to the base of the tongue by thyroglossal duct and reaches the final pretracheal site by the 7th weeks of gestation after which there is obliteration of the thyroglossal duct [5]

The thyroid begins to function at approximately the end of third month at which the first follicle containing colloid becomes visible [6]

The function of the thyroid gland is to synthesis, store and secrets the hormones thyroxin (T4) and tri-iodothyronine (T3). Thyroid hormones are essential for human as because they maintain the BMR, growth and development of brain, development of the reproductive systems, not only this it promote normal growth and skeletal development. Thyroid hormones also stimulate O2 (oxygen) consumption by metabolically active tissue[7]. So, it is very much necessary to know about the functional status and diseases of thyroid gland.

The incidence of ectopic thyroid tissue represent to the amount 7-10%. Thyroid ectopia has been described in lateral neck since in the 18th century. It is commonly found along the course of thyroglossal duct or around the two lobes of the gland. Lingual thyroid is the most common ectopic thyroid, others are sub-lingual below the level of hyoid bone, not only this site also found in sub-mandibular region, larynx, trachea, parotid gland, branchial cyst, carotid bifurcation. In abroad ectopic thyroids are reported in the liver, gall bladder, pancreas and adrenal gland, pelvic ectopic thyroid are seen in ovary and vagina.[8]

In this study most of the ectopic thyroid tissue seen in base of the tongue that is lingual.

We found 28 ectopic thyroid patient among 1895 patient. Incidence is 1.5%.

To see the thyroid size and shape, thyroid scan is very useful technique as because high resolution ultrasonography can only say about the anatomy of the gland. Moreover thyroid scan by radioactive iodine or Tc99m pertechnatate is very much sensitive technique for detection of thyroid pathology as well as appropriate position of the gland (ectopic thyroid)[2]

Any mass located at the base of the tongue or in the midline of the neck in a child may potentially be ectopic thyroid tissue. When such a mass is noted thyroid scanning is appropriate to ascertain if the mass contains thyroid and if there is a normally situated thyroid.[9]

In our study all ectopic thyroid patient diagnosis were confirmed by thyroid scintigraphy along with HRUS. Fig-I & II shows image of ectopic thyroid gland.

Hypothyroidism is common in patient with ectopic thyroid gland. In fact thyroid tissue is believed to be responsible for up to 75% of primary non-goitrous hypothyroidism in paediatric patients. In the first few months of the life an ectopic thyroid gland may function sufficiently to ensure normal growth and mental development. However, as an individual age the ectopic tissue is unable to meet the demands of the developing individual and become hypothyroidism.[10]

In this study about 05 patient had hypothyroidism (17.85%) and 06 had sub-clinical hypothyroidism (21.43%).

Normally in euthyroid state T3, T4 and TSH values within normal physiological limits. In

hypo-state T3 and T4 values are low with high TSH levels. In sub-clinical hypothyroidism state normal T3 and T4 with high TSH level [11]

In a study it was found that 0.48 % cases were congenitally abnormal among which majority cases was ectopic thyroid gland.[12]

The symptoms produced by ectopic thyroid tissue are result of the site of ectopic tissue and the size[13]

Thyroid ectopia is commonly encountered in female and is noticed in any age group[13]

Ectopic thyroid is four times more common in female than male.[14] In our study among 28 patient female were 22 and male were 06. Age range from 3 to 36 yrs. M:F 1:3.6.

Failure to recognize and diagnosis of the lingual or sub-lingual thyroid may lead to inadvertent excision and permanent hypothyroidism requiring life long thyroid replacement. In hypothyroid state if ectopic thyroid patient delayed diagnosis leads to brain dysfunction with intellectual abnormality.

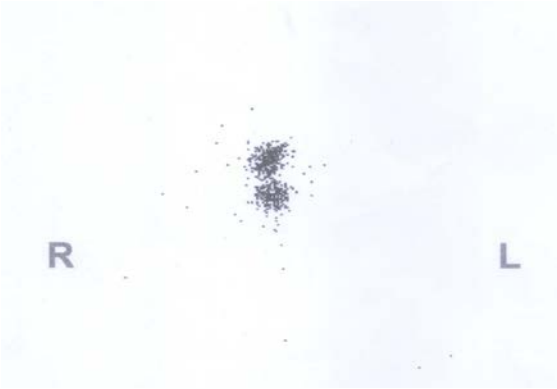


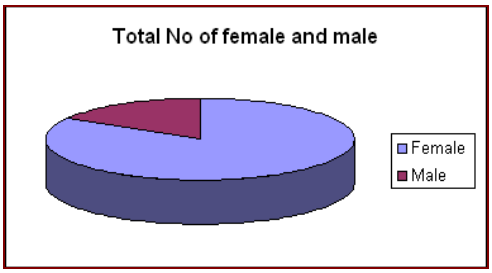
Fig-I: Thyroid scan of sub lingual thyroid.

Fig- II: Scintigraphy of Lingual thyroid using I^{131}.

Results

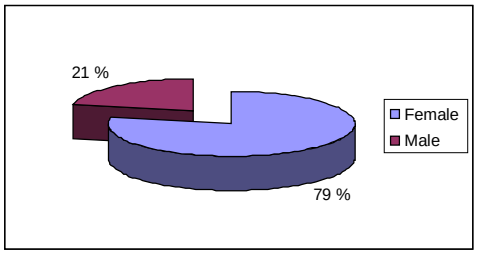
Total number of patients -1895, among them most of the patients were female, 1587 and 308 were male.

Pie Chart – I: Shows total number of female and male in this study.



About 28 patients had ectopic thyroid gland, 22 were female and 06 were male. (Male: female 1: 3.6).

Pie chart –II: Shows about 79 % patients were female those had ectopic thyroid tissue.



Is this study 1895 were included to see size, shape and position of thyroid gland as well as thyroid deformity. Among them 28 were presented with ectopic thyroid gland and majority of the cases had diffusely enlarged thyroid (36.25%)

Tab- I: Shows different type of thyroid disease

Sl No	Type of thyroidal abnormality	No of patients	Percentage
1	Diffusely enlarged thyroid	687	36.25%
2.	Multi-nodular goiter (MNG)	364	19.20%
3.	Cold nodular goiter	384	20.26%
4.	Partially cold nodular goiter	171	9.02%
5.	Simple nodular goiter	60	3.17%
6.	Toxic nodular goiter	85	4.48%
7.	Normal thyroid gland	91	4.80%
8.	Extra- thyroidal lesion	25	1.31%
9.	Ectopic thyroid	28	1.50%

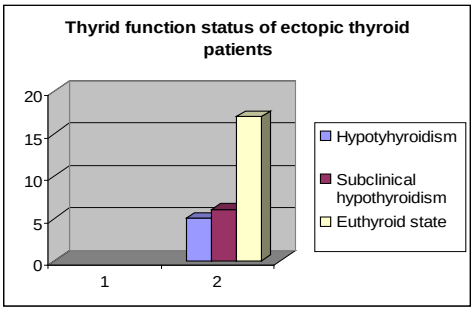
Among 28 patients of ectopic thyroid glands, majority of the cases had lingual thyroid (10), sub-lingual thyroid in 06, over cricoid cartilage in 05 and others were seen in sub-mandibular and sub-mental region.

Table- II: Shows majority of the ectopic thyroid patients of this study were lingual varieties.

Sl No	Position of thyroid gland	Total number of patients	Percentage
1.	Lingual thyroid	10	35.71%
2.	Sub lingual	06	21.43%
3.	Over cricoid cartilage	05	17.85%
4.	Others(Sub-mandibular / sub-mental region)	07	25 %

Biochemical analysis was done for the ectopic thyroid patient. Among them 17.85% patients had hypothyroidism.

Bar-diagram- Shows about 17.85 % (5) patients were suffering from hypothyroidism and 21.43 % (6) patients had sub clinical hypothyroidism



Conclusion

Ectopic thyroid should be considered during evaluation of a midline neck mass or hypothyroidism. Careful clinical examination, thyroid function test and radionuclide imaging help establish the diagnosis and localize ectopic thyroid. Appropriate treatment should be decided on an individual basis.

A midline swelling at the back of tongue on upper neck should be therefore always be investigated for the possibility of an ectopic thyroid before excision. Presence or absence of a normally situated gland should always be confirmed. Sub-lingual or sub-hyoid ectopic thyroid is particularly likely to be mistaken clinically for a thyroglossal cyst or other non-thyroid swelling.

So, diagnosis of ectopic thyroid is immensely important. In our study the incidence of ectopic thyroid at CNMU Rajshahi is about 1.5%.

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