

Hashimoto's Thyroiditis: A predominantly Multinodular Thyroid Disorder in Coastal South India

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ABSTRACT

Introduction: Hashimoto's thyroiditis is common cause of diffuse goiter and hypothyroidism in US. But in India hashimoto's thyroiditis is increasingly presenting as nodular goiter. This is significant as multi nodular goitres in young adults and adolescents have varying causes and HT requires a different therapeutic approach and if untreated can progress to malignancies later.

Objectives & Aim: To estimate the proportion of Multi Nodular form of Hashimoto's Thyroiditis among cases of thyroid disorders and To determine the causative factors for Multi Nodular form of Hashimoto's Thyroiditis.

Materials & Methods : This is a cross sectional study of patients who reported with thyroid enlargements at the General Surgery department of this hospital during a period of 3 years between January 2013 and December 2015 was done. All patients who underwent thyroidectomy with histology proven Hashimoto's thyroiditis were included in the study.

Results: In our study conducted retrospectively in a 122 patients who underwent thyroidectomy surgery, the most common presenting symptom was nodular goiter(81.9%).The incidence of Hashimoto's thyroiditis is high (36%) in the age group of 31 – 40 years, followed by 21 – 30 years of age(24.6%). The incidence of Hashimoto's thyroiditis is more common in females with a F:M of 30.5:1. In total no of 122 patients, 36% presented in the euthyroid state.

Conclusion: The increased incidence of Multinodular goiter in Indian population and euthyroid state could indicate variation in etiopathogenetic factors attributed to racial characters, dietary factors and iodine consumption.

Keywords: Hashimoto's Thyroiditis, Multinodular Goiter, Diffuse Goiter, Hypothyroidism, Thyroidectomy.

Introduction

Hashimoto's thyroiditis is a common cause of hypothyroidism and diffuse goiter as per many western literature but there are Indian studies which showed Hashimoto's Thyroiditis presenting as multinodular goiter.^[1-7] The incidence of Hashimoto's thyroiditis presenting as nodular goiter was 59% in a retrospective study conducted on surgically treated patients in a tertiary hospital in an iodine sufficient area of southern India.^[1] In the study 34 cases of goiter with associated HT, who underwent thyroidectomy between 2007 and 2010 were analyzed for indications of surgery. Minimum follow- up period was 6 months. F:M ratio was 31:3 with mean age of 41.3 years. Goiter was diffuse in 41% and nodular in 59%. 16 (47%) of patients were hypothyroid.^[1] Multi nodular goiters (MNG) are common thyroid disorder presentation in this region in south India and many of our patients domiciled in the coastal regions, undergo hormonal evaluation and medical treatment for either a hyper or hypothyroidism. But with increasing evidence in Indian literature of Hashimoto's

thyroiditis presenting as MNG till now considered less common, it is an important to study and reinforce this knowledge, as Hashimoto's thyroiditis requires a different therapeutic approach and left untreated can develop malignancies.^[8,9] Hashimoto's Thyroiditis is less common in iodine deficient regions globally and with increasing incidence after excessive iodine intake.^[10-12] Our region is predominantly coastal in location. This study documents the clinical and histopathological profiles in patients in this region of south India.

Materials and Methods

This is a cross sectional study of patients who reported with thyroid enlargements at the General Surgery department of this hospital during a period of 3 years between January 2013 and December 2015 was done. Detailed clinical history and clinical examination performed as per *Das- A Manual on Clinical Surgery 5th edition oct.2000*. The data of the physical examination was recorded in the questionnaire form. Ultra sonogram and thyroid profile and FNAC were done routinely and the results tabulated. Treatment was

advised as per the hospital protocol - Surgery is indicated for patients with (1) multinodular goitre, (2) solitary nodule, (3) goitre causing pressure effects as per the textbook Bailey & Love's Short Practice of Surgery 25th edition 2008 pages 788 & 800. For solitary nodules, hemi thyroidectomy was done. For multi nodular goitre and goitre causing pressure symptom, subtotal or total thyroidectomy was done. The specimen sent for HPE in formalin contained containers. All patients who underwent thyroidectomy with histology proven Hashimoto's thyroiditis were included in the study. Patients who underwent thyroidectomy whose biopsy is not Hashimoto's thyroiditis were excluded from the study. This sample also included patients with papillary carcinoma in a background of Hashimoto's thyroiditis. Of 522 patients who presented with thyroid enlargements 122 patients were diagnosed to have Hashimoto's thyroiditis by histopathology. The clinical, radiological and laboratory data were recorded and tabulated.

The following proportions were calculated. (1) Prevalence of Multi Nodular Form of Hashimoto's Thyroiditis. (2) Proportion of patients with Multi Nodular Form of Hashimoto's Thyroiditis having Hypothyroidism / Euthyroid state / Hyperthyroidism. (3) Proportion of patients with Multi Nodular Form of Hashimoto's Thyroiditis with various clinical, radiological, laboratory, histological patterns and gender distribution. The data was analysed using epi info.

Results

Of a total no of 122 patients were included in the study (44)36% of the patients were in the age group of 31 – 40 yrs. and (30)24.6% in the age group of 21 – 30 years (Table1). Of these 122 patients only 4 patients were men with the female preponderance of 30.5: 1 and all these

4 men were above 50years of age. Of the 122 patients (48)39.3% were hypothyroid, (44)36% were euthyroid and (30)24.6% were hyperthyroid (Table1). The duration of disease was 6months or less in (52)42.6% of patients and 2 years or more in (38)31.1%.

Clinical examination of these patients showed that (100)81.9% of patients presented with nodular goiter, 59% had multi nodular goitre,[Fig 1]19.6% had toxic multi nodular goiter, (4)3.27% presented with solitary thyroid nodule.[Fig.2]Only 18% (22) of patients with histology proven Hashimoto's thyroiditis[fig 3-5]presented as diffuse goiter. Of the total 122 patients 27.5% showed diffuse goiter in ultrasound examination, 32.7% had multiple hypoechoic nodules, 29.3% had nodules with altered echogenicity and 61.7% had cervical lymph node enlargement also. FNAC was done and (60)49.18% of patients were diagnosed as Hashimoto's thyroiditis[fig 3-5]by cytology, (44)36% was called nodular goiter,[fig 6](4)3.27% as simple goiter, (6)4.91% as lymphocytic thyroiditis and (8)6.55% as papillary carcinoma.

The major indication for surgical intervention in these patients were large multi-nodular goiters that presented with airway compression and cosmetic defects.

These patients were offered surgical treatment as per protocol and (109)90% of patients underwent total thyroidectomy, 6.7% had subtotal thyroidectomy and 3.3% had hemi-thyroidectomy. All 8 cases (6.55%) diagnosed as papillary carcinoma by cytology were evaluated further and found to have papillary carcinoma in a background of Hashimoto's thyroiditis. Preoperatively 64.2% were found to be adherent to the strap muscles alone or to the strap muscles and trachea.

Table 1: Hashimotos Thyroiditis - Comparison of 3 year data.

No	Feature	Our Study 2016	Barghav et al 2011	Thomas.T. et al 2014
1	No of Thyroidectomies studied	522	149	-
2	No of Patients with HT	122	34	144
3	Percentage of HT	23.3%	22.8%	-
4	Presenting Feature			
	MNG	78.6%	21%	28%
	SNT	3.27%	32%	4%
	Diffuse	18%	47%	68%
	Hyperthyroid	24.6%	11.7%	15.2%
	Euthyroid	36%	41%	69.4%
	Hypothyroid	39.3%	47%	8.3%
5	Gender Distribution (F:M)	30.5:1	31:1	8.6:1
6	Age Preponderance	31-40 years (36%)	51- 60 years	21-30 years



Fig. 1; Multinodular goitre.



Fig. 2; Solitary nodule thyroid.

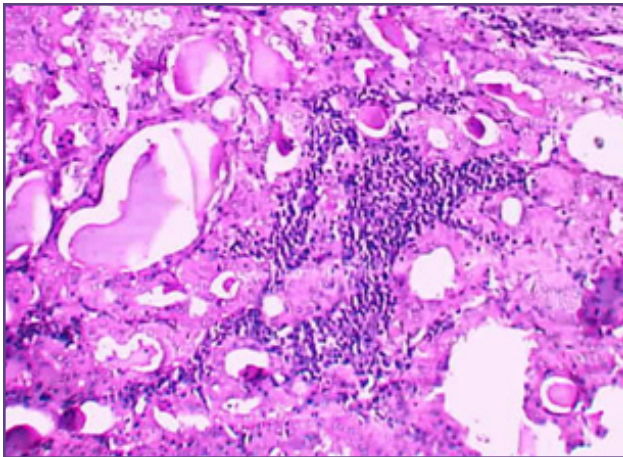


Fig. 3; Photomicrograph showing prominent Hurthle Cell change with lymphocytic infiltration, atrophic follicles and colloid., HE, x100.

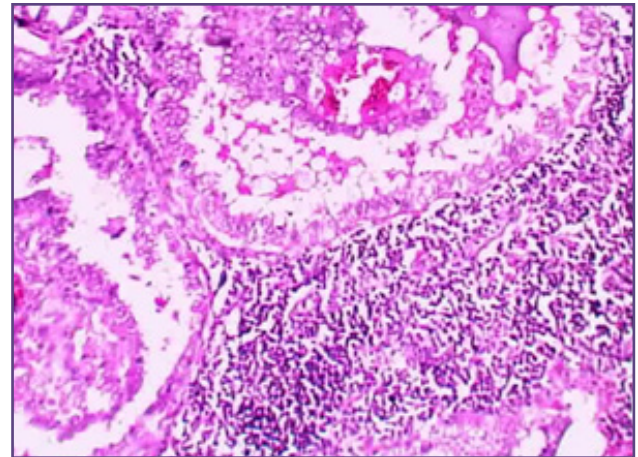


Fig. 4; Histology of hashimoto's thyroiditis : showing Hurthle cell change and lymphocytic infiltration HE,x100.

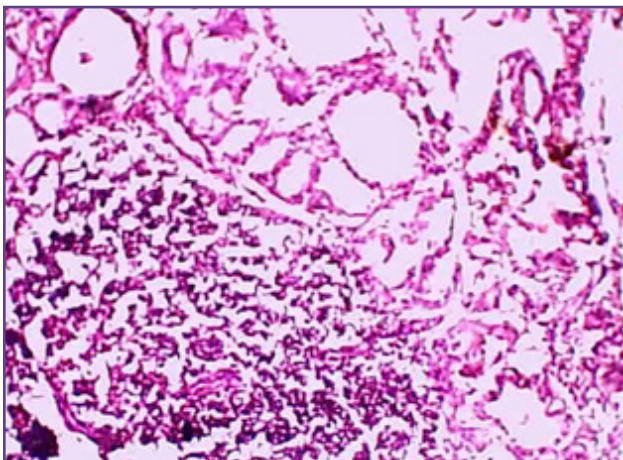


Fig. 5; Histology of hashimoto's thyroiditis: showing dense lymphocytic infiltration and atrophic follicles [HE, x100].

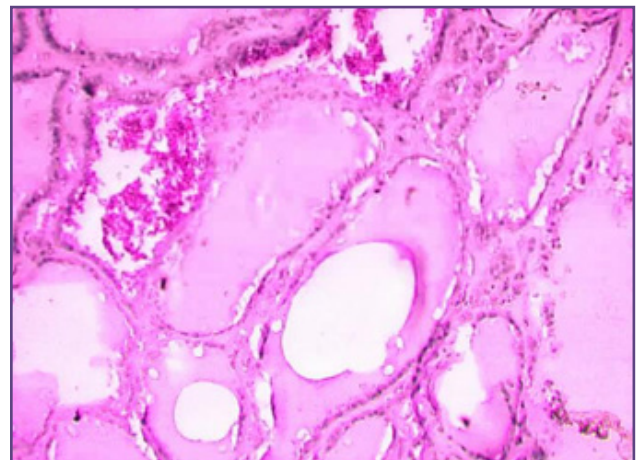


Fig. 6; Histology of nodular goitre: Nodular goitre thyroid with colloid filled follicles [HE, x100].

Discussion

In this study 36% of the patients belong to the age group of 31 – 40 years in variation to a similar study by Larson SD, Jackson LN, Riall TS, et al (2007),^[1] were patients with Hashimoto's thyroiditis were in the age group of 50-60 years followed by 20-30 years. In this study, the prevalence of Hashimoto's thyroiditis is predominant in the age group 30-40 years while in the age group below 20 years of age, only women were affected which is similar to reports of Siriweera et al (2010).^[11] This variation in age distribution could be related to variation in racial characteristics. This study showed a significant female preponderance of 30.5:1 and all male patients belonged to 6th decade of life. In a study reported by Larson SD, Jackson LN, Riall TS, et al (2007)^[1] the gender distribution of Hashimoto's thyroiditis had a female preponderance with a female to male ratio of 10.3, ranging from 4:1 to 15.1. This high female preponderance in a significant outcome of this study and could be related to variation in racial characteristics.

Hashimoto's thyroiditis is known as the most common cause of hypothyroidism and diffuse goiter in United States, which occurs more frequently in women.^[5-7] Siriweera et al (2010)^[13] has reported that 10% of patients with Hashimoto's present as multinodular goiters and 6.59% as colloid nodules. An Indian study conducted in a similar setting in south India, reported that 59% of Hashimoto's thyroiditis patients presented as nodular goiter while rest presented as diffuse goiter.^[2] Our study concludes that 81.9% of patients with Hashimoto's thyroiditis presented as nodular goiter, (59% as non toxic MNG, 19.6% as toxic MNG and 3.27% solitary nodules), and 18% as diffuse goiter. A study by Zois C, *et al.* (2003)^[10] in coastal areas has reported an excess intake of iodine in coastal areas. Anca et al (2010) reported that 54.9% of Hashimoto's thyroiditis were euthyroid or had subclinical disease with normal TSH level and 45% of patients were hypothyroid.^[15] In this study 39.3% of patients of Hashimoto's thyroiditis were hypothyroid and 36% of them were euthyroid with 24.6% of them presented with hyperthyroidism. Bhargav et al (2010)^[2] has reported that in Hashimoto's thyroiditis a transient hashitoxicosis is followed by progressive hypothyroidism. Hashimoto's thyroiditis is documented as the most common cause of hypothyroidism and diffuse goiter in United States, occurring more frequently in women.^[16,17] The predominance of multi nodular goiter and euthyroid state in patients in this study indicates that the etiopathogenetic factors involved in causation of Hashimoto's thyroiditis in this region is variable compared to that reported in western literature and could be attributed to possible racial, dietary factors and iodine consumption.^[18] P.R.K. Bhargav et al (2010)^[2] reported that pre-operative

diagnosis of Hashimoto's is possible in 32% by FNAC while in this study 49.2% were diagnosed as Hashimoto's by FNAC, 36% as nodular goiter and 4.91% as lymphocytic thyroiditis and 6.55% as papillary carcinoma of thyroid.

Hashimoto's thyroiditis patients presenting with diffuse goiter and hypothyroidism are treated with levo thyroxine. 90% of patients underwent total thyroidectomy in our patients, 6.7% underwent subtotal thyroidectomy and 3.3% of them underwent hemi-thyroidectomy. All patients diagnosed preoperatively as papillary carcinoma underwent total thyroidectomy.

A study reported in Malaysia had documented ethnic differences in Hashimoto's thyroiditis, with a high prevalence among Indians compared to the Chinese and Malay.^[19]

Conclusion

The patient population attending this hospital are predominantly from coastal regions and belong to racially unique south Indian communities this study concludes that the variation in age distribution and high female preponderance could be related to variation in racial characteristics, the predominance of multi nodular goiter and euthyroid state in patients in this study could indicate variation in etiopathogenetic factors attributed to racial characters, dietary factors and iodine consumption.

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