

The Clinical and Biochemical Profiles Of Thyroiditis: A Study In Tertiary Care Hospital

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ABSTRACT

Background: Thyroiditis comprises of a large group of diverse inflammatory conditions. Not only the causes of thyroiditis are extremely varied, their clinical presentation may also be diverse and are difficult to categorise in a simple fashion. Our aim is to find out the clinical presentation and biochemical profile in thyroiditis.

Material and methods: A prospective study on 50 patients irrespective of age, sex, religion and socio-economic status was done in Regional institute of medical science Imphal during a study period of two calendar year from October 2012 to September 2014. A complete history and examinations was done. Patients were investigated for thyroid function test, immunoassays of thyroglobulin antibodies (TGAb), thyroid peroxidase antibodies (TPO ab) titres, Fine Needle Aspiration Cytology and Ultrasound.

Results: The maximum number of cases of thyroiditis falls in the age group of 36-45 years with female preponderance. Out of 50 cases, 82% didn't have pain at presentation while 18% had pain. 66% cases had diffuse swelling at presentation, 6% cases had nodular swelling, 18% cases had multinodular swelling and 10% cases had no swelling. Thyroid function test falls in normal range in most of the cases. Most of the Hashimoto's thyroiditis had both increased in Anti-TG and Anti-TPO antibodies.

Conclusion: Our data indicates that most of the patients of thyroiditis are female and commonly occur in younger to middle aged group. Diffuse neck swelling, pain, throat discomfort and hyperthyroid or hypothyroid symptoms are the clinical presentation of thyroiditis. TSH, T3 and T4 are within the normal ranges in most cases while anti-TG antibodies and anti-TPO antibodies are elevated in hashimoto's thyroiditis.

Keywords: Hashimoto's thyroiditis, De Quervain's thyroiditis, clinical and biochemical profile

I. INTRODUCTION

Thyroiditis is an inflammation of the thyroid gland. The term thyroiditis encompasses many relatively common thyroid disorders which have been classified according to various schemes.¹ Thyroiditis includes the autoimmune or quasi-autoimmune causes and viral or postviral conditions and infections, including those of bacterial and fungal origins ; a chronic sclerosing form of thyroiditis term Riedel's thyroiditis and miscellaneous causes of various types, including radiation-induced and granulomatous causes, such as sarcoidosis, as well as lithium.²

The clinical spectrum of chronic autoimmune thyroiditis includes both Hashimoto's thyroiditis, or goitrous autoimmune thyroiditis, and atrophic thyroiditis, which are believed to evolve via the same pathogenic mechanism. Chronic autoimmune thyroiditis may present with varying degrees of severity, ranging from asymptomatic goitre to rarely myxedema coma. Those with hypothyroidism may present with nonspecific symptoms consistent with the overall slowing of the body's metabolism, including fatigue, cold intolerance, lethargy and weight gain. Individual patient may exhibit signs of hypothyroidism requiring thyroid hormone replacement but can develop TSH receptor stimulating antibodies that may be clinically manifest as hyperthyroidism, so-called hashitoxicosis.^{3,4}

This study attempts to provide some clarity of the disease types with its clinical presentation and biochemical profile, which shall add to the current understanding of the disease process.

II. MATERIALS AND METHODS

A prospective study was conducted in the Department of Otorhinolaryngology, Regional institute of medical sciences, Imphal for duration of two calendar year from October 2012 to September 2014. Fifty patients diagnosed as thyroiditis by FNAC, which attended the Outpatient Department and/or admitted in the ward irrespective of age, sex, religion and socio-economic status formed the study group. All cases of non-inflammatory and malignant thyroid diseases, Grave's disease and painful neck swellings of non thyroid origin were excluded from the study.

The diagnosed cases of the subtypes of thyroiditis were evaluated with thorough history and complete Otorhinolaryngology examination. Thyroid function test (T3, T4, and TSH), Immunoassays of thyroglobulin antibodies (TG ab) and thyroid peroxidase antibodies (TPO ab) titres were done. The study was carried out after obtaining approval from Institutional Ethical Committee (IEC), Regional Institute of Medical Sciences, Imphal and consent was taken from all the patients. Data was recorded and statistical analysis was done using IBM SPSS.

III. RESULTS AND OBSERVATIONS

A total of 50 cases were included in the present study out of which maximum number of cases belongs to the age group of 36-45 years constituting 38%. The youngest patient was 16 years and oldest was 64 years old.

Table 1: Age distribution of thyroiditis patients (N=50)

Age (years)	Hashimoto's thyroiditis	De Quervain thyroiditis	Total	
	Frequency	Frequency	frequency	%
16-25	13	0	13	26
26-35	6	2	8	16
36-45	18	1	19	38
46-55	5	3	8	16
>55	2	0	2	4
Total	44	6	50	100

Most of the cases of thyroiditis were female with M: F ratio of 1:7.3. Hashimoto's thyroiditis had male to female ratio of 1:10

Table 2: Sex distribution of the thyroiditis patients (N=50)

Sex	Hashimoto's thyroiditis	De Quervain's thyroiditis	Total	
	Frequency	Frequency	Frequency	%
Male	4	2	6	12
Female	40	4	44	88
Total	44	6	50	100

All patients i.e. 6 (100%) patients of De Quervain's thyroiditis presented with pain while only 3 (6.8%) patients of HT had pain at presentation. Again all 6 patients (100%) had throat discomfort in De Quervain's thyroiditis while in HT patients only 15(34.1%) had throat discomfort. 13 patients (29.5%) had hyperthyroid symptoms at presentation in HT while in De Quervain's thyroiditis only 4 patients (66.7%) had the symptoms. 15 patients (34.1%) of HT had hypothyroid symptoms while no patients of DQT had it. Only 3 patients (6.8%) of HT had prior childbirth within 1 year while no patients of DQT had prior childbirth within one year.

Table 3: Distribution of symptoms in thyroiditis patients

Symptoms		Hashimoto's thyroiditis		De Quervain's thyroiditis		Total	
		Frequency	%	Frequency	%	Frequency	%
Pain	Present	3	6.8	6	100	9	18
	Absent	41	93.2	0	0	41	82
Throat discomfort	Present	15	34.1	6	100	21	42
	Absent	29	65.9	0	0	29	58
Hyperthyroid	Present	13	29.5	4	66.7	17	34

symptoms	Absent	31	70.5	2	33.3	33	66
Hypothyroid symptoms	Present	15	34.1	0	0	15	30
	Absent	29	65.9	6	100	35	70
Prior childbirth within 1 year	Present	3	6.8	0	0	3	6
	Absent	41	93.2	6	100	47	94

*HT- Hashimoto's thyroiditis, DQT- De Quervain's thyroiditis

Out of 50 patients, maximum numbers of patients (66%) presented with diffuse neck swelling while 18% presented with multinodular swelling, 6% with nodular and 10% had no swelling.

Table 4: Presence of swelling of neck at presentation in thyroiditis patients

Neck swelling	Hashimoto's thyroiditis	De Quervain thyroiditis	Total	
	Frequency	Frequency	Frequency	%
Diffuse	28	5	33	66
Nodular	3	0	3	6
Multinodular	9	0	9	18
No swelling	4	1	5	10

In this study, 17(38.6%) patients of HT had serum TSH level in the normal range and an equal number of patients i.e. 17 (38.6%) had more than the normal range.

In De Quervain's thyroiditis group, all patients i.e. 6 had TSH below normal out of which 4(66.7%) patients had severely reduced level.

Table 5: Serum Thyroid stimulating hormone level in Hashimoto's thyroiditis and De Quervain's thyroiditis patients

		Hashimoto's		De Quervain's		Total	
		frequency	%	frequency	%	frequency	%
TSH(μIU/L)	<0.1	4	9.1	4	66.7	8	16
	0.1-0.4	6	13.6	2	33.3	8	16
	0.4-4.2	17	38.6	0	0	17	34
	4.2-15	10	22.7	0	0	10	20
	>15	7	15.9	0	0	7	14

Maximum number of cases of thyroiditis, 36 patients (72%) had their serum T3 level within normal range. 13 patients (26%) had more than the normal range. And also Maximum number of cases, 26(52%) patients had serum T4 in the normal range (64.4-160.9) and 14 patients (28%) had more than normal range.

Table 6: Serum T3 and T4 level in patients of Hashimoto's thyroiditis and De Quervain's thyroiditis

Serum T3 nmol/L		Hashimoto's	De Quervain's	Total	
		frequency	frequency	frequency	%
	<0.9	1	0	1	2
	0.9-2.46	33	3	36	72
	>2.46	10	3	13	26
Serum T4 nmol/L	<64.4	10	0	10	20
	64.4-160.9	24	2	26	52
	>160.9	10	4	14	28

Maximum number of cases of HT had increased serum anti-TG (68.2%) and anti thyroid peroxidase(81.8%) and in DQT group, all patients were found to have normal serum anti-TG and anti thyroid peroxidase levels.

Table 7: Anti TG and Anti TPO serum levels in patients of Hashimoto's thyroiditis and De Quervain's thyroiditis

Anti TG		Hashimoto's		De Quervain's		Total	
		frequency	%	frequency	%	frequency	%
IU/L	<80	5	11.4	6	100	11	22
	80-200	9	20.5	0	0	9	18
	>200	30	68.2	0	0	30	60
Anti TPO IU/L	<85	1	2.3	5	83.3	6	12
	85-125	7	15.9	1	16.7	8	16
	>125	36	81.8	0	0	36	72

IV. DISCUSSION

Hashimoto's thyroiditis

The age range of Hashimoto's thyroiditis was 16-64 years in this study which was comparable to the studies done by Bhatia et al⁶ (6-60) and Friedman et al⁷ (18-71). The maximum number of patients were in the age group of 36-45 years which was consistent to the study by Bhatia et al.⁶ Most of the HT patients were female with the male to female ratio being 1:10. This was similar with the study done by Bhatia et al⁶ and Jayaram et al⁸. In most of studies, diffuse neck swelling was the most common presentation, like Bhatia et al⁶ (89.5%) and Jayaram et al⁸ (67%). This was in line with the present study where 63.6% of the patients had diffuse swelling and 27.3% had nodular swellings. Only Friedman et al⁷ showed more nodular swellings (20%) than diffuse swellings.

In the present study, the serum TSH level was elevated in 17(38.6%) patients. This was similar with the findings of Jayaram G et al⁸ where TSH was elevated in 39.7% of the patients. Subclinical hypothyroidism is mild elevation of TSH with normal circulating thyroid hormone levels. Incidence of subclinical hypothyroidism in the present study was 22.7% which was comparable to Bhatia et al⁶(24.4%). Hypothyroidism is usually found in few patients of HT, especially in the earlier part of the disease. The incidence of hyperthyroidism in the present study was 9.1% at presentation. This was comparable with the findings of Jayaram G et al⁸. This wide range of serum levels of TSH and thyroid hormones in the various studies, may be due to patient's presentation at various stages of the disease progression. Radetti G et al¹⁰, in a study on 160 children with Hashimoto's thyroiditis found that the concentrations of TSH may increase, decrease or remain unchanged with time. Anti-TPO antibodies and anti-TG antibodies were raised in majority of the patients of HT. Of the two, anti-TPO antibodies have a higher specificity in Hashimoto's thyroiditis. Rho MH et al¹¹ in a study on autoimmune thyroiditis(AIT) concluded that thyroid peroxidase antibody titre is significantly associated with the degree of thyroid inflammation and detection of thyroid peroxidase antibody is a very specific means of diagnosing autoimmune thyroiditis. 81.8% of the patients in the present study had elevated anti-TPO antibodies. This finding was consistent to the study by Jayaram G et al⁸ (93%). Anti-TG antibody was raised in 68.2% in the present study which was comparable to 82.7% in the study by Jayaram G et al.

De Quervain's thyroiditis

In this study, the patients of De Quervain's thyroiditis were in the age range of 29-46 years which was consistent with the studies by Nordyke RA et al¹²(20-59) and Faribuddin et al¹³(16-60 years). In the present study, most patients of De Quervain's thyroiditis (50%) were in the age group 46-55 years. As in HT, female preponderance was seen in the earlier studies and also in the present study; however in the present study female preponderance for De Quervain's thyroiditis was less relative to that of HT. This was in line with Nordyke et al¹² and Faribuddin et al.¹³ Pain as a presenting symptom is seen in all the patients of De Quervain's thyroiditis in the present study (100%). This was in consistent with the study by Faribuddin et al¹³(100%) and Nishihara et al¹⁴(96%). In the present study, 66.7% of the De Quervain's thyroiditis patients had hyperthyroid features like palpitation with tachycardia, intolerance to cold, weight loss and tremors etc. This was comparable to the study by Nishihara et al¹⁴. In DQT group, all the patients have i.e. 6 have TSH below normal out of which 4(66.7%) patients have severely reduced level. In the study by Faribuddin M et al¹³, TSH level was reduced in about 84%. In the present study, serum T4 is elevated in 66.7% of the patients of DQT and T3 in 50% patients. Anti-TPO and anti-TG antibodies are absent in DQT.

V. CONCLUSION

Thyroiditis comprises a large group of diverse inflammatory conditions of which HT and DQT are routinely encountered in OPD. Most patients are female and commonly in the younger to middle aged group. All patients of DQT present with pain and throat discomfort while it is relatively uncommon in HT patients. Most of the cases presented with diffuse neck swelling which is followed by multinodular swelling and nodular

swellings. Hypothyroidism is common at presentation among HT patients, whereas hyperthyroidism is more common in DQT. Anti-TPO and anti-TG antibodies are elevated in HT patients, with the former being more specific. These antibodies are not raised in DQT patients.

*HT- Hashimoto's thyroiditis, DQT- De Quervain's Thyroiditis, Anti TPO – Anti thyroid peroxidase, Anti TG – Anti thyroglobulin

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