



Cytomorphological spectrum of autoimmune thyroiditis and its correlation with serum level of anti-thyroglobulin antibodies

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ABSTRACT

The present study titled “Cytomorphological spectrum of autoimmune thyroiditis & its correlation with serum level of antithyroglobulin antibodies” was conducted among the patient at IMCHRC, Indore. In which we found that out of the total 100 cases, granulomatous thyroiditis 31, lymphocytic thyroiditis 42, Hashimoto thyroiditis 27.

Keywords— Hematology, Cytology

1. STUDY DESIGNED

Cross-sectional observational study.

2. INTRODUCTION

Thyroiditis or inflammation of the thyroid gland encompasses a diverse group of disorders characterized by some form of thyroid inflammation.

There are 3 most common and clinically significant subtypes:

- Hashimoto Thyroiditis
- Granulomatous Thyroiditis
- Subacute Lymphocytic Thyroiditis

Autoimmune Thyroiditis- is a disease in which the body interprets the thyroid gland and its hormone products T₃, T₄ and TSH as threats, therefore producing special antibodies that target the thyroid cells.

Specialists clinically separate autoimmune thyroiditis into two categories:

- If goiters are present, it is understood as Hashimoto's thyroiditis.
- If the thyroid is atrophic but does not present goiters, it is denominated atrophic thyroiditis.

Signs and symptoms of autoimmune thyroiditis are:

- Hyperthyroidism
- Hypothyroidism
- Genetics
- High iodine consumption
- Age

Hashimoto's thyroiditis (HT) is the second most common thyroid lesion diagnosed on FNAC and is one of the most common causes of hypothyroidism in iodine sufficient areas. HT is characterized by Hurthle cell change and increased number of mature and transformed immature lymphocytes impinging on follicular cells. Diagnosis of HT is based on clinical, cytomorphological and serologic parameters. FNAC of the thyroid provides a safe and accurate method for the diagnosis of HT. FNAC is the gold standard for the diagnosis of this condition. The present study was designed to analyze the cytomorphological features of HT and correlate it with serological parameters.

3. MATERIALS AND METHODOLOGY

The present study titled “Cytomorphological Spectrum of Autoimmune thyroiditis and its correlation with serum level of Antithyroglobulin Antibodies” was conducted among the patient at Index Medical College, Hospital & Research Centre, Indore

3.1 Study Design

Cross-sectional observational study

3.2 Study area

Index Medical College, Hospital and Research Centre, Indore, Madhya Pradesh, India.

3.3 Study population

Patient with thyroiditis treated at Index Medical College, Hospital and Research Centre, Indore were included in the study.

3.4 Study duration

January 2017 to April 2018.

3.5 Sample size

100 Patients.

3.6 Data collection

All cases undergoing FNAC for thyroid swelling during the study period will be included in the study. Clinical details USG findings will be noted as per Performa. Detailed FNAC finding and anti-thyroglobulin antibody levels will be performed in each case. Clinical findings will be correlated with cytomorphological findings and antibody levels.

3.7 Methodology

All the patient coming to Index Medical College and Research Centre in clinical branches with thyroid swelling during the study period will be included in the present study. FNAC will be performing with 22 gauge needle and 10ml syringe with or without USG guidance as per need. Multiple smears will be prepared which will be air dried and fixed in ethanol for staining by May-Grunwald-Giemsa stain and Papanicolaou staining method. A detailed clinical history and signs and symptoms will be noted for every case as per Performa. A detailed examination of the cytologic smears was done and features like cellularity, amount and nature of colloid, Hurthle cell change, anisonucleosis of follicular cells, the spectrum of reactive lymphoid cells and other inflammatory cells like eosinophils, macrophages, giant cells, and epithelioid cells were noted. Cytologic grading of thyroiditis was done according to the Bhatia et al grading. Thyroid function tests were done using COBAS E analyzer.

Grades Morphologic Features

(0) No lymphoid follicles

(I) Few lymphoid cells Infiltrating the follicles Number of lymphocyte In background.

(II) Moderate lymphocytic infiltration with Hurthle cell change/giant cells/anisonucleosis.

(III) Florid lymphocytic infiltrate with the germinalcenter formation, very few follicular cells left.

3.8 Inclusion criteria

- All patients with palpable swelling undergoing FNAC procedure.
- All age group patients.

3.9 Exclusion criteria

- FNAC diagnosis of thyroid swelling other than thyroiditis.

4. RESULTS

Table 1: Distribution of participants according to sex (n=100)

Sex	Number of Patients	Percentage (%)
Male	18	18.0
Female	82	82.0
Total	100	100.0

Table 2. Distribution of participants according to type of swelling (n=100)

Type of swelling	Number of Patients	Percentage (%)
Painful Swelling	71	71.0
Painless Swelling	29	29.0
Total	100	100.0

Table 3. Distribution of participants according to FNAC Diagnosis (n=100)

FNAC Diagnosis	Number of Patients	Percentage (%)
Granulomatous Thyroiditis	31	31.0
Lymphocytic Thyroiditis	42	42.0
Hashimoto's Thyroiditis	27	27.0
Total	100	100.0

Table 4: Distribution of participants according to Antithyroglobulin Antibody levels (n=100)

ATG Levels	Number of Patients	Percentage (%)
<100 IU/ml	0	0.0
100-500 IU/ml	35	35.0
501-1000 IU/ml	58	58.0
>1000 IU/ml	7	7.0
Total	100	100.0

Table 5: Correlation between age and diagnosis (n=100)

Age Group	Granulomatous Thyroiditis	Lymphocytic Thyroiditis	Hashimoto's Thyroiditis	Total
0-20 years	1	3	1	5
21-40 years	16	24	15	55
41-60 years	9	13	9	31
>60 years	5	2	2	9
Total	31	42	27	100

Chi square= 3.5239 ; p-value= 0.7407 (insignificant)

Table 6: Correlation between sex and diagnosis (n=100)

Sex	Granulomatous Thyroiditis	Lymphocytic Thyroiditis	Hashimoto's Thyroiditis	Total
Male	7	8	3	18
Female	24	34	24	82
Total	31	42	27	100

Chi square= 1.34 ; p-value= 0.5117 (insignificant)

5. DISCUSSION

There were only 18 (18%) males as against 82 (82%) females in the present study (Table 1). The prevalence of thyroid disorders is known to be higher among females in almost all regions of the world. However, the sex correlation did not affect the type of thyroiditis as the p-value for this came out to be 0.5117 which was statistically insignificant. In the present study, all the cases presented with a neck swelling. 71 (71%) out of the 100 cases had painful swelling while 29 (29%) presented with painless swelling (Table 2). Neck swelling is the first and the foremost clinical feature that is being noticed by the individuals themselves. Also, many subjects harbor the swelling for a long time until it starts giving additional difficulties such as difficulty in swallowing, hoarseness of voice etc. Prummel et al⁽¹¹⁶⁾ reported all 100% painful swellings while Vestergaard et al⁽¹¹⁷⁾ reported only 5% cases with painful swelling in their respective studies. Table 3 shows the distribution of cases according to FNAC diagnosis. Out of the 100 cases, 31 had Granulomatous thyroiditis, 42 had lymphocytic thyroiditis while 27 had Hashimoto's thyroiditis. This percentage is not comparable with the actual prevalence of thyroiditis in the population as here, all the thyroid cases only have been studied and the rate of thyroid patients seeking medical consultation may be quite different from the actual number of cases. The levels of antithyroglobulin antibodies were found to be above 100 IU/ml in all the cases studied. 35 cases had levels between 100-500, 58 between 501-1000 and 7 above 1000 IU/ml (Table 4). However, this correlation was being found to be statistically insignificant in the present study. In the present study, the correlation of age with the various types of thyroiditis was found to be statistically insignificant (Table 5). It was seen that the maximum number of cases among all the three types of thyroiditis studied were in the age group of 21-40 years. The number of cases was the least in the age group of 0-20 years followed by those above 60 years. The p-value was found to be 0.7407, which was of no statistical significance. The age correlation was found to be significant in a few studies done in other parts of the world. (Table 6). Among the three types of thyroiditis being studied, the number of females was a little higher in lymphocytic thyroiditis, but it could not hold any significance statistically. A few other studies that studied the correlation of sex with the type of thyroiditis had the following results:

Author	Sex correlation
Gray et al ⁽¹¹¹⁾	Insignificant
Gamble et al ⁽¹¹²⁾	Significant
Gharib et al ⁽¹¹³⁾	Insignificant
Falconer et al ⁽¹¹⁴⁾	Significant
David et al ⁽¹¹⁵⁾	Significant

6. CONCLUSION

The various studies on the correlation of cytomorphological spectrum and antithyroglobulin antibodies in autoimmune thyroiditis cases all across the globe have great variations in their findings. Though the present study could not prove any statistical significance of the association of antithyroglobulin antibodies, yet the levels of these antibodies are essential as a part of thyroid workup of clinically diagnosed patients. This not only leads the pathologists to continuously seek for better than the present investigations but also leads clinicians to decide a dynamic management regimen.

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