

CYTOMORPHOLOGICAL FEATURES OF HASHIMOTO THYROIDITIS-WITH SONOLOGICAL AND SEROLOGICAL FINDINGS-ANALYSIS OF 80 CASESSreechithra Kartha¹, Shruthi B², Ajith Roni D³, Narain C.D⁴**HOW TO CITE THIS ARTICLE:**

Sreechithra Kartha, Shruthi B, Ajith Roni D, Narain C. D. "Cytomorphological Features of Hashimoto Thyroiditis-with Sonological and Serological Findings-Analysis of 80 Cases". Journal of Evolution of Medical and Dental Sciences 2014; Vol. 3, Issue 42, September 08; Page: 10551-10556, DOI: 10.14260/jemds/2014/3375

ABSTRACT: BACKGROUND: Hashimoto thyroiditis is the most common form of thyroiditis. The incidence is found more in the coastal areas for which iodine excess is described as a probable etiology. Ours is a coastal area, where significant number of females is coming to the hospital with diffuse enlargement of thyroid. This prompted us to do the current study. FNAC is a simple, cost effective, diagnostic modality which when used in combination with sonological and serological investigations, helps the clinicians in the correct diagnosis, even in the early stage of the disease.

MATERIALS AND METHODS: Retrospective study was done for a period of 18 months from January 1st 2013 to JUNE 31st 2014. The clinical, sonological and serological aspects of 80 cases of Hashimoto's thyroiditis were studied and compared with the cytomorphological features. **RESULTS:** The peak incidence of Hashimoto's thyroiditis was seen in women of 2nd decade. Coexisting colloid goiter was noted in significant number of cases. Subclinical thyroid and euthyroid cases (serologically) showed cytomorphological features diagnostic of thyroiditis. Correlation with sonological features were seen in 66 % of cases. Lymphocytic infiltrate in follicular cell clusters, background lymphocytes and plasma cells and hurthle cells were diagnostic of hashimoto's thyroiditis. **CONCLUSION:** The increased frequency of Hashimoto's thyroiditis in younger age group, in euthyroid cases and its coexistence with colloid goiter should prompt us to take more detailed and large scale study in Kerala, especially in the coastal areas. FNA should be done as a first line mode of investigation, since it helps in identifying Hashimoto thyroiditis in the initial stages when the serological findings may be normal.

KEYWORDS: Hashimoto's thyroiditis, FNAC, Subclinical hypothyroidism, Hurthle cells, Lymphocytes.

INTRODUCTION: Hashimoto thyroiditis (HT) is the most common form of thyroiditis and the second commonest thyroid disorder next only to colloid goitre. The incidence of thyroiditis is increasing in the recent years. The incidence is found more in the coastal areas for which iodine excess is described as a probable etiology. Ours is a coastal area, where significant number of females is coming to the hospital with diffuse enlargement of thyroid. This prompted us to do the current study. Fine needle aspiration cytology (FNAC) is a simple and cost effective diagnostic modality, which when used in combination with sonological and serological investigations, helps the clinicians to make correct diagnosis, even in the early stage of the disease.

MATERIALS AND METHODS: This is a retrospective study done on 80 cases of Hashimoto Thyroiditis (HT) diagnosed from 1st January 2013 TO 31st June 2014 (18 months). The clinical details, sonological and serological findings available for the cases were taken. For all the cases, FNA was done using non aspiration technique with 23-25 gauge needles. 2-4 rapid passes were made.

ORIGINAL ARTICLE

If the initial aspirate was not adequate, repeat aspirations were made using aspiration technique. Samples were taken from both lobes of thyroid in case of diffuse enlargement and also from the nodules if present. Papanicolaou staining was done and the smears were examined.

The diagnostic criteria for Hashimoto thyroiditis included-lymphocytes and plasma cells infiltrating the follicular epithelial cells (Fig. 1), increased number of lymphocytes in the background with or without lymphoid follicles (Fig. 2), hurthle cell change (Fig. 3), multinucleated giant cells, epithelioid cell clusters, and anisonucleosis (Fig. 4).

Presence of colloid, macrophages and honey combing pattern of follicular epithelial cells were also examined for coexisting colloid goitre. Clinical details including the age and sex distribution, nodular presentation were analyzed. The correlation between the cytological features, sonological and the serological findings were also studied.

RESULTS: Out of 80 patients, 92.5% (n=74) were females and 7.5% (n=6) were males. The age group of patients ranged from 11-65 years with 58.75% (n=47) in 3rd and 4th decade. (Table 1) The age and sex distribution.

Age group	Male	Female	Total
11-20	1	10	11
21-30	1	23	24
31-40	3	20	23
41-50	0	17	17
51-60	1	2	3
61-70	0	2	2

Table 1

Clinical examination revealed diffuse enlargement in 56% (n=45), nodularity in 38% (n=30) and solitary nodule in 6% (n=5). Serological data were available for 70 cases. 27.5% (n=19) were euthyroid, 68.5% (n=48) hypothyroid and 4% (n=3) hyperthyroid. Of the hypothyroid, 40% (n=28) were having subclinical hypothyroidism. (Table 2)

Clinical and laboratory findings	Frequency in our study
Female: Male	12.3:1
Diffuse presentation	56.25%(n=45)
Nodular	37.5% (n=35)
Overt hypothyroid	28.5%
Subclinical hypothyroid	40%
Euthyroid	27.5%

Table 2

Sonological correlation was available in 69 cases. 66% of thyroiditis cases showed heterogeneous (mixed) echotexture with or without micronodules, Sonological features of thyroiditis with nodular colloid goiter was seen in 19% of cases. The frequency of various sonological features is shown in Table 3.

ORIGINAL ARTICLE

Sonological findings	Frequency in our study
Mixed echogenicity with or without hypoechoic micronodules (thyroiditis)	66% (n=45)
Mixed echogenicity and multiple iso/hyperechoic nodules (Thyroiditis with nodular goiter)	19.1% (n=13)
Multiple nodules(nodular colloid goiter)	11.7% (n=8)
Solitary nodule	4% (n=3)

Table 3

Of the total number of cases, 81% (n=15) presented with cytological features of thyroiditis only, whereas, 19% (n=15) showed coexisting benign follicular lesions which were diagnosed on the basis of monolayered sheets/clusters of follicular epithelial cells, macrophages and background colloid. All of these were cases which had nodular presentation clinically.

The frequency of cytomorphological features of Hashimoto's Thyroiditis: Table 4.

Cytomorphologic features	Percentage of cases
Increased background lymphocytes	92%
Lymphocytic infiltration of follicles	87%
Hurthle cells	68%
Anisonucleosis	62%
Plasma cells	45%
Giant cells	8.5%
Epithelioid cells	6%
Colloid	25%
Histiocytes	15%

Table 4

DISCUSSION: In our study, the female to male ratio was 12:1, where as in other similar studies it was 10:1.¹ The classic age group described for thyroiditis is 30-50 yrs² where as in our study the peak was in younger age group-21-30 yrs.

Bhatia et al from India found majority in 3rd and 4th decade.³ Many authors have linked the increased incidence of HT particularly in coastal areas to excess of iodine.⁴⁻⁶ Even though the diffuse presentation was the most common presentation, nodular presentation was also seen in significant number.

Nodules are seen in early stage of disease. Higher incidence of nodularity may be due to the younger age of the patient or may be due to the coexisting colloid goiter. 40% of cases had subclinical hypothyroidism.

Bagchi et al found incidence of 8.17% in their study⁷ and Chandanwale et al found an incidence of 15.38%.⁸ 27.5% of cases were euthyroid. Staii et al found 50% cases of thyroiditis were

ORIGINAL ARTICLE

in euthyroid and subclinical hypothyroid state.⁹ The commonest sonological finding was heterogenous (mixed) echogenicity with small hypoechoic nodules which are highly diagnostic of HT.¹⁰

But thyroiditis is seen even in cases of isolated nodules. Coexistence of thyroiditis and colloid goiter is seen in significant no of cases.¹¹ Regarding the cytomorphology, background lymphocytes and plasma cells,, lymphocytic infiltrate in the follicular cell clusters, anisonucleosis and hurthle cell change were important findings.¹²⁻¹⁴

In the younger patient's florid lymphocytic infiltrate and less number of hurthle cells were seen where as in older age group, hurthle cell proliferation and lymphoepithelial lesions were more frequent. Florid hurthle cell proliferation, giant cells and granuloma were seen in only few cases.

CONCLUSION: The increased frequency of Hashimoto thyroiditis in younger age group, in serologically euthyroid cases and its coexistence with colloid goiter should prompt us to take more detailed and large scale study in Kerala, especially in the coastal areas .FNA should be done as a first line mode of investigation in diffuse enlargement of thyroid, since it helps in identifying Hashimoto thyroiditis in the initial stages even when the serological findings are normal.

REFERENCES:

1. Siriweera EH, Ratnatunga NV. Profile of Hashimoto's Thyroiditis in Sri Lankans: Is There an Increased Risk of Ancillary Pathologies in Hashimoto's Thyroiditis? *Journal of Thyroid Research*. 2010 doi: 10.4061/2010/124264. Article ID 124264.
2. Vanderpump MP, Tunbridge WM, French JM, Appleton D, Bates D, Clark F, et al. The incidence of thyroid disorders in the community: A twenty-year follow-up of the Whickham Survey. *Clin Endocrinol (Oxf)* 1995; 43: 55-68.
3. A Bhatia, A Rajwanshi, R J Dash, B R Mittal, A K Saxena. Lymphocytic Thyroiditis—is cytological grading significant? A correlation of grades with clinical, biochemical, ultrasonographic and radionuclide parameters. *Cyto Journal*, vol. 4, article 10, 2007.
4. Zois C, Stavrou I, Kalogera C, Svarna E, Dimoliatis I, Seferiadis K et al. High prevalence of autoimmune thyroiditis in schoolchildren after elimination of iodine deficiency in north western Greece. *Thyroid* 2003; 13: 485-9.
5. Li Y, Teng D, Shan Z, Teng X, Guan H, Yu X, et al. Antithyroperoxidase and antithyroglobulin antibodies in a five-year follow-up survey of populations with different iodine intakes. *J Clin Endocrinol Metab* 2008; 93: 1751-7.
6. Jayaram G, Marwaha RK, Gupta RK, Sharma SK. Cytomorphologic aspects of thyroiditis. A study of 51 cases with functional, immunologic and ultrasonographic data. *Acta Cytol* 1987;31:687-93
7. Bagchi N, Brown TR, Parish RF. Thyroid dysfunction in adults over age 55 years. A study in an urban US community. *Arch Intern Med* 1990; 150: 785-7.
8. Chandanwale SS, Gore CR, Bamanikar SA, Gupta N, Gupta K. Cytomorphologic spectrum of Hashimoto's thyroiditis and its clinical correlation: A retrospective study of 52 patients. *Cyto Journal* 2014; 11:9.
9. Staii, Anca, et al. Hashimoto thyroiditis is more frequent than expected when diagnosed by cytology which uncovers a pre-clinical state. *Thyroid Research* 3 (2010).

ORIGINAL ARTICLE

10. Yeh HC, Futterweit W, Gilbert P. Micronodulation: Ultrasonographic sign of Hashimoto thyroiditis. *J Ultrasound Med* 1996; 15: 813-9.
11. Kollur SM, Sayed SE, Hag IAE. Follicular thyroid lesions coexisting with Hashimoto thyroiditis: incidence and possible sources of diagnostic errors. *Diagn Cytopathol* 2003; 28: 35-38.
12. Neelam Sood, Jitendra Singh Nigam. Correlation of Fine Needle Aspiration Cytology Findings with Thyroid Function Test in Cases of Lymphocytic Thyroiditis. *Journal of Thyroid Research*, vol. 2014, Article ID 430510, 5 pages, 2014. doi:10.1155/2014/430510.
13. Friedman M, Shimaoka K, Rao U, Tsukada Y, Gavigan M, Tamura K. Diagnosis of chronic lymphocytic thyroiditis (nodular presentation) by needle aspiration. *Acta Cytol.*1981; 25: 513-22.
14. Kini SR, Miller JM, Hamburger JI. Problems in the cytologic diagnosis of the “cold” thyroid nodule in patients with lymphocytic thyroiditis.

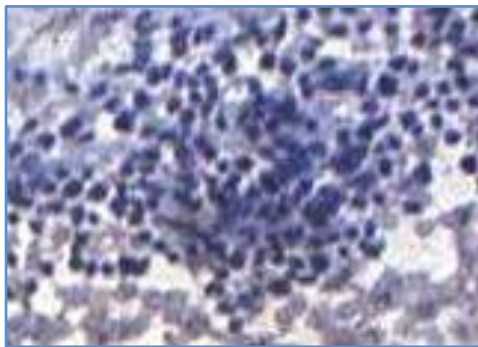


Fig. 1: Lymphocytic infiltrate in follicular epithelial cell clusters

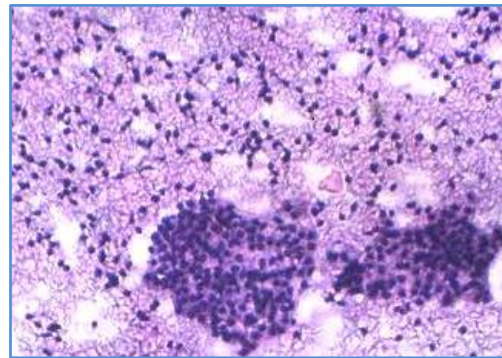


Fig. 2: Background lymphocytes

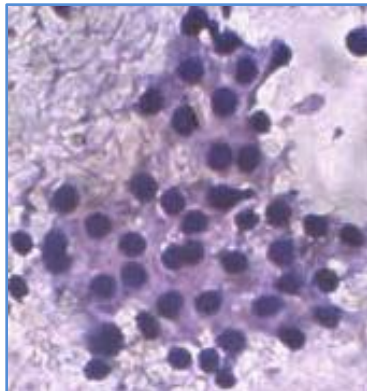


Fig. 3: Hurthle cells

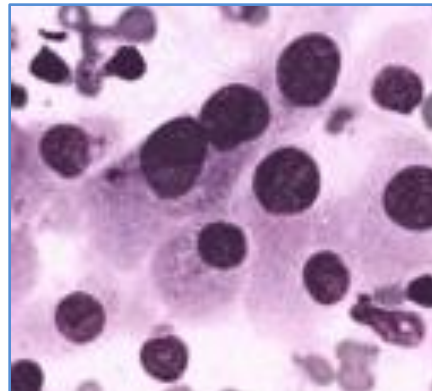


Fig. 4: anisonucleosis

AUTHORS:

1. Sreechithra Kartha
2. Shruthi B.
3. Ajith Roni D.
4. Narain C. D.

PARTICULARS OF CONTRIBUTORS:

1. Assistant Professor, Department of Pathology, Travancore Medical College, Kollam.
2. Assistant Professor, Department of Pathology, Travancore Medical College, Kollam.
3. Laboratory Director, Deviclinical Laboratory, Kollam.

4. Professor and Head of the Department, Department of Pathology, Travancore Medical College, Kollam.

NAME ADDRESS EMAIL ID OF THE CORRESPONDING AUTHOR:

Dr. Sreechithra Kartha,
Gourinandanam,
Kunnicode P.O, Kollam.
Email: chithrarpr@gmail.com

Date of Submission: 20/08/2014.
Date of Peer Review: 21/08/2014.
Date of Acceptance: 01/09/2014.
Date of Publishing: 08/09/2014.