

A STUDY OF BIOCHEMICAL, CYTOLOGICAL AND HISTOPATHOLOGICAL CORRELATION IN THYROIDITIS

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Pathology

Manuscript reference number
NJMDR_4418_16

Article submitted on: 24 May 2016
Article accepted on: 27 July 2016

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Abstract:

Introduction: Thyroiditis, or inflammation of the thyroid gland, encompasses a diverse group of disorders. Along with the clinical history, biochemical profile (Thyroid function tests) and fine needle aspiration cytology play a major role in the early diagnosis of thyroiditis. The study deals with correlation between cytodiagnosis and histodiagnosis and biochemical thyroid profile in thyroiditis. It also evaluates the pitfalls in cytodiagnosis.

Materials and methods: The materials for this study included fine needle aspiration smears and thyroidectomy specimens received at the Department of Pathology, in a tertiary care hospital, Nalgonda, Andhra Pradesh. During the 2 years study period, fine needle aspiration was performed for 384 cases of various thyroid lesions. Out of these cases, 109 thyroidectomies were received. On histopathology, thyroiditis alone and thyroiditis along with non-neoplastic and neoplastic lesions were reported for 30 cases, which formed the material of this study. Biochemical thyroid profile was done for all the cases.

Results: Correlation between cytopathological and histopathological diagnosis showed 20 (66.7%) true positive cases, 10 (33.3%) false negative cases and 66.7% sensitivity. The present study revealed 50% cytodiagnostic sensitivity of Hashimoto's thyroiditis. According to biochemical thyroid profile 5 (17%) were euthyroid and 25 (83%) hypothyroid.

Conclusion: In spite of the fallacies of FNAC of thyroid gland, with proper technique; viz multiple punctures at multiple sites, it is possible to eliminate the cytopathological and histopathological discordance and increase the sensitivity of this baseline test.

Keywords: Thyroiditis, Hashimoto's thyroiditis, Lymphocytic thyroiditis, cytodiagnosis, histodiagnosis, discordance

Introduction:

Thyroiditis, or inflammation of thyroid gland, encompasses a diverse group of disorders characterized by some form of thyroid inflammation and also the lesions of uncertain significance in which sclerosis and lymphocytic infiltrates are the most relevant pathologic findings. Along with the clinical history, biochemical profile

(Thyroid function tests) and Fine needle aspiration cytology (FNAC) play a major role in the early diagnosis of thyroiditis. The present study includes correlation between biochemical thyroid profile, cytopathological and histopathological findings in thyroiditis. The coexisting follicular thyroid lesions and malignancies of thyroid associated with thyroiditis are also dealt with, in this study. The study also

evaluates the efficacy and pitfalls of FNAC in diagnosis of thyroiditis.

Materials and methods:

The materials for this study included fine needle aspiration smears and thyroidectomy specimens received at the Department of Pathology, in a tertiary care hospital, Nalgonda, Andhra Pradesh.

The study was done for a period over 2 years. During this period, FNA was performed for 384 cases of various thyroid lesions. FNAC smears were stained by Hematoxylin & Eosin (H&E), Papanicolaou (Pap) stain for wet films and Giemsa stain for air-dried films. A smear was considered adequate if there were at least 6-8 cellular fragments on each of 2 slides.

Out of these 384 cases, 109 thyroidectomies were received in the Department of Pathology. On histopathology, thyroiditis alone and thyroiditis along with non-neoplastic and neoplastic lesions were reported for 30 cases, which formed the material of this study.

The biochemical thyroid profile (serum T3, T4, TSH) was done for all the cases using the ELISA technique (Ranbaxy kit).

Reference range for these test were as follow:

T3: 0.7 – 1.84 mg/dl (microgram/decilitre)

T4: 4.2 – 12 mg/dl (microgram/decilitre)

TSH: 0.3 – 4 mu/ml (milliunits/millilitre)

Results:

In the present study, 30 cases diagnosed as either thyroiditis alone or thyroiditis along with non-neoplastic and neoplastic lesions were studied.

Out of 30 cases of thyroiditis, 28 (93.3%) cases were females and 2 cases (6.7%) males. Majority of the cases 21 (70%) were seen in 21-40 years of age group. The youngest patient in the study was 16 years and the oldest was 50 years. (Table 1)

Out of 30 cases, on FNAC the case distribution was thyroiditis 7 (23.3%), non-neoplastic 4 (13.3%), neoplastic 5 (16.7%), non-neoplastic/neoplastic 1 (3.3%), non-neoplastic with thyroiditis 8 (26.7%), neoplastic with thyroiditis 3 (10%), and non-neoplastic/neoplastic with thyroiditis 2 (6.7%). (Table 2)

Out of 30 cases, on histopathology (HP) the case distribution was thyroiditis 12 (40%), non-neoplastic with thyroiditis 7 (23.3%), and neoplastic with thyroiditis 11 (33.3%). (Table 3)

Correlation between cytopathological and histopathological diagnosis was done and true positive cases were 20 (66.7%) and the false negative cases were 10 (33.3%). The true positive cases and the false negative cases were as follow:

True Positive Cases: (20): 66.7%

A) FNAC – Thyroiditis; HP – Thyroiditis (7)

FNAC - Hashimoto's thyroiditis; HP - Hashimoto's thyroiditis: 5 cases

FNAC - Lymphocytic thyroiditis; HP: Hashimoto's thyroiditis: 1 case

FNAC - Lymphocytic thyroiditis with mild Hashimoto's thyroiditis; HP: Hashimoto's thyroiditis: 1 case

B) FNAC – Thyroiditis with non-neoplastic lesions; HP – Thyroiditis with non-neoplastic lesions (4)

FNAC – Goiter with mild Hashimoto's thyroiditis; HP – Goiter with Hashimoto's thyroiditis: 1 case

FNAC – Hyperplastic goiter with Lymphocytic thyroiditis; HP – Treated Grave's disease with Lymphocytic thyroiditis: 1 case

FNAC – Hyperplastic goiter with Lymphocytic thyroiditis; HP – Goiter with Lymphocytic thyroiditis: 1 case

FNAC – Adenomatous goiter/Follicular Neoplasm with Lymphocytic thyroiditis; HP – Goiter with Hashimoto's thyroiditis: 1 case

C) FNAC – Thyroiditis with neoplastic lesions; HP – Thyroiditis with neoplastic lesions (3)

FNAC – Hurthle cell neoplasm with Lymphocytic thyroiditis; HP – Hurthle cell adenoma with Granulomatous thyroiditis: 1 case

FNAC – Follicular Neoplasm with Lymphocytic thyroiditis;
HP – Follicular Adenoma with Lymphocytic thyroiditis: 1 case

FNAC – Papillary carcinoma with Hashimoto’s thyroiditis;
HP – Follicular variant of papillary carcinoma with Hashimoto’s thyroiditis: 1 case

D) FNAC – Thyroiditis with non-neoplastic lesions; HP – Thyroiditis (3)

FNAC – Goiter with Lymphocytic thyroiditis; HP – Hashimoto’s thyroiditis: 2 cases

FNAC – Adenomatous goiter/Follicular Neoplasm with Lymphocytic thyroiditis; HP – Hashimoto’s thyroiditis: 1 case

E) FNAC – Thyroiditis with non-neoplastic lesions; HP – Thyroiditis with neoplastic lesions (3)

FNAC – Goiter with Lymphocytic thyroiditis; HP – Follicular Adenoma with Lymphocytic thyroiditis: 2 cases

FNAC – Goiter with Lymphocytic thyroiditis; HP – Follicular Adenoma with Hashimoto’s thyroiditis: 1 case

FALSE NEGATIVE CASES: (10): 33.3%

A) FNAC – Non-neoplastic lesions; HP – Thyroiditis with non-neoplastic lesions (2)

FNAC – Goiter; HP – Goiter with Lymphocytic thyroiditis: 2 cases

B) FNAC – Non-neoplastic lesions; HP – Thyroiditis with neoplastic lesions (1)

FNAC – Goiter; HP – Follicular Adenoma with Lymphocytic thyroiditis: 1 case

C) FNAC – Non-neoplastic lesions; HP – Thyroiditis (1)

FNAC – Goiter; HP – Hashimoto’s thyroiditis: 1 case

D) FNAC – Neoplastic lesions; HP – Thyroiditis with neoplastic lesions (4)

FNAC – Adenomatous goiter/Follicular Neoplasm; HP – Follicular Adenoma with Lymphocytic thyroiditis: 1 case

FNAC – Follicular Neoplasm; HP – Follicular Adenoma

with Lymphocytic thyroiditis: 2 cases

FNAC – Papillary carcinoma; HP – Papillary carcinoma with Lymphocytic thyroiditis: 1 case

E) FNAC – Neoplastic lesions; HP – Thyroiditis with non-neoplastic lesions (1)

FNAC – Follicular Neoplasm; HP – Goiter with Lymphocytic thyroiditis: 1 case

F) FNAC – Neoplastic lesions; HP – Thyroiditis (1)

FNAC – Follicular Neoplasm; HP – Hashimoto’s thyroiditis: 1 case

Correlation between cytopathological and histopathological diagnosis showed 20 (66.7%) true positive, 10 (33.3%) false negative and 66.7% sensitivity. Study revealed 50% cytodiagnostic sensitivity of Hashimoto’s thyroiditis.

Out of 30 cases, 5 (17%) cases were hypothyroid, [Hashimoto’s thyroiditis (4) and Follicular adenoma with Lymphocytic thyroiditis (1)]. The remaining 25 (83%) cases were euthyroid.

Table 1: Sex distribution as per the age group

Age group (Years)	Sex (%)	Total (%)	
	Female	Male	
11-20	4 (100)	-	4
21-30	9 (90)	1 (10)	10
31-40	10 (90.90)	1 (9.09)	11
41-50	5 (100)	-	5
Total	28 (93.3)	2 (6.7)	30 (100)

Table 2: Illustrates cytological diagnosis

Cytopathology	Number of cases (%)
Hashimoto’s thyroiditis	5 (16.7)
Lymphocytic thyroiditis	1 (3.3)
Lymphocytic thyroiditis with mild Hashimoto’s thyroiditis	1 (3.3)
Goiter	4 (13.3)
Goiter with Lymphocytic thyroiditis	5 (16.7)
Goiter with Hashimoto’s thyroiditis	1 (3.3)
Hyperplastic goiter with Lymphocytic thyroiditis	2 (6.7)
Adenomatous goiter/ Follicular neoplasm	1 (3.3)

Adenomatous goiter/ Follicular neoplasm with Lymphocytic thyroiditis	2 (6.7)
Hürthle cell neoplasm with Lymphocytic thyroiditis	1 (3.3)
Follicular neoplasm	4 (13.3)
Follicular neoplasm with Lymphocytic thyroiditis	1 (3.3)
Papillary carcinoma	1 (3.3)
Papillary carcinoma with Hashimoto's thyroiditis	1 (3.3)

Table 3: Illustrates histopathological diagnosis

Histodiagnosis	Number of cases (%)
Hashimoto's thyroiditis	12 (40%)
Treated Grave's disease with Lymphocytic thyroiditis	1 (3.3)
Goiter with Lymphocytic thyroiditis	4 (13.3)
Goiter with Lymphocytic thyroiditis	2 (6.7%)
Hürthle cell adenoma with Granulomatous thyroiditis	1 (3.3%)
Follicular adenoma with Lymphocytic thyroiditis	7 (23.3%)
Follicular adenoma with Hashimoto's thyroiditis	1 (3.3%)
Papillary carcinoma with Lymphocytic thyroiditis	1 (3.3%)
Follicular variant of papillary carcinoma with Hashimoto's thyroiditis	1 (3.3%)

Table 4: Illustrates sensitivity of Fine needle aspiration cytology in the diagnosis of Hashimoto's thyroiditis

Authors	Sensitivity (%)
Ribeiro et al.[30]	81
Sirpal[28]	78
Nguyen et al.[16]	92
MacDonald et al.[10]	69
Lerma et al.[24]	67.5
Present Study	50

Discussion:

Hashimoto described chronic thyroiditis in 1912. Stewart in 1933 first mentioned the cytological diagnosis of thyroiditis. Soderstrom N first described FNAC of goiter and diagnosed first case of subacute thyroiditis.¹ Lopez Cardozo first

described the cytological picture of struma lymphomatosa in a monograph on clinical cytology.² Hashimoto's thyroiditis is a self immune pathology involving the whole gland and having high correlation with differentiated thyroid carcinoma³ like papillary carcinoma,³⁻¹⁵ and follicular variant of papillary carcinoma.^{12,16,17} Although the link between chronic inflammation and cancer is well established, the association between Hashimoto's thyroiditis and papillary carcinoma has been controversial in medical bibliography since its initial description by Dailey et al in 1955.⁴

Deliberate search for evidence of papillary carcinoma in every case of Hashimoto's thyroiditis and follow up of patients is necessary to improve diagnostic accuracy of FNA.^{12,18} Surgical exploration is necessary in cases of severe lymphocytic thyroiditis on FNA and repeatedly negative antibody titres to exclude neoplasm.¹⁹

The coexistent lesions were defined only if they had occurred in a normal region of thyroid gland, distinct from the site of the thyroid neoplasm. Peritumoral inflammatory response was not designated as Hashimoto's thyroiditis and lymphocytic thyroiditis.

Ott RA *et al.* study showed 38% incidence of thyroid carcinoma coexistent with Hashimoto's thyroiditis. The high incidence of carcinoma thyroid in Hashimoto's thyroiditis lends credence to the hypothesis that Hashimoto's thyroiditis is a predisposing factor in the development of thyroid carcinoma.²⁰ Patil PV *et al.* reported 0.5%-23.7% frequency of carcinoma in Hashimoto's thyroiditis.⁹ Pasquale MD *et al.* study revealed that atypical nodules may represent a precursor lesion of papillary carcinoma in patients with Hashimoto's thyroiditis.¹³ Prasad ML *et al.* observed focal papillary carcinoma-like immunophenotypic changes in Hashimoto's thyroiditis and put forward the possibility of early focal premalignant transformation in some cases of Hashimoto's thyroiditis.¹⁵

Tamimi *et al.* found the association between lymphocytic thyroiditis and thyroid tumors (papillary carcinoma, follicular carcinoma, and follicular adenoma). Prevalence of lymphocytic infiltrate was indicative of autoimmune thyroiditis which was significantly higher in papillary carcinoma (58%), follicular carcinoma (20%), and follicular adenoma (14%). Their study revealed that there is possibility of an immunologic mechanism involved in the pathogenesis of papillary carcinoma which stimulates

lymphocytic infiltration in the thyroid tissue through an autoimmune mechanism.¹⁴

Singh B *et al.* gave the cytodiagnostic sensitivity of papillary carcinoma with Hashimoto's thyroiditis as 91%.¹¹

Prognosis of patients with Hashimoto's thyroiditis and carcinoma thyroid is good, probably due to the presence of the chronic inflammatory reaction which suppresses growth and metastatic dissemination of the coexistent neoplasm of the thyroid gland. No lymphocytic infiltration shows a high rate of recurrence.^{5,6,11,21,22}

Carson HJ *et al.* studied 2 cases of papillary carcinoma with Hashimoto's thyroiditis that showed cytopathological and histopathological correlation. Their study included 6 cases of follicular adenoma diagnosed on FNAC which on biopsy showed Hashimoto's thyroiditis.⁸ Study done by Ko HM *et al.* had 1 case suggestive of follicular neoplasm on FNAC, and diagnosed as Hashimoto's thyroiditis on histopathology. One case was suggestive of chronic lymphocytic thyroiditis on FNAC and on biopsy was diagnosed as follicular adenoma.²³ Kollur SM *et al.* study showed 1 case suggestive of follicular neoplasm on FNAC and on histopathology diagnosed as Hashimoto's thyroiditis. One follicular variant of papillary carcinoma on FNAC, on histopathology was diagnosed as follicular variant of papillary carcinoma with Hashimoto's thyroiditis.¹⁷ Lerma E *et al.* study showed 4 cases of lymphocytic thyroiditis associated with neoplasms (2 papillary carcinoma, 1 follicular carcinoma, and 1 oncocytic adenoma).²⁴

Present study revealed 6 cases of follicular adenoma coexistent with lymphocytic thyroiditis, 2 cases of papillary carcinoma 1 associated with lymphocytic thyroiditis and the other with Hashimoto's thyroiditis. There was also 1 case of Hürthle cell adenoma with granulomatous thyroiditis.

Amongst 2 cases of papillary carcinoma on FNAC, 1 case was Papillary carcinoma with Hashimoto's thyroiditis (Figure 1A) and the other Papillary carcinoma. These on biopsy were diagnosed as Papillary carcinoma with Hashimoto's thyroiditis (1) and Papillary carcinoma with lymphocytic thyroiditis (1) respectively. This discordance in 1 case of papillary carcinoma occurred as the needle on FNA procedure aspirated only the malignant lesion and did not aspirate (reach) the area showing lymphocytic thyroiditis. (Figure 1B)

In our study 1 case suggestive of follicular neoplasm on FNAC was diagnosed as Hashimoto's thyroiditis on histopathology. There are chances of misinterpretation of follicular neoplasm in the background of Hashimoto's thyroiditis. The cytologic changes in the hyperplastic follicular and metaplastic oncocytic epithelium are similar to those seen in follicular neoplasm. Hence in the presence of follicular cell pleomorphism and/or moderate to excessive number of lymphoid cells the diagnosis of follicular neoplasm should not be rendered.^{8,10,17,23,25}

In the present study, out of 30 cases, 12 cases were diagnosed as Hashimoto's thyroiditis on histopathology. The cytopathological and histopathological correlation was seen in 6 cases (Figure 2 ABC).

Six cases on FNAC were misdiagnosed as, goiter with lymphocytic thyroiditis (2), and the rest 4 cases were diagnosed as follicular neoplasm (Figure 3A), goiter (Figure 3B), lymphocytic thyroiditis, adenomatous goiter/follicular neoplasm with lymphocytic thyroiditis. Presence of a coexistent neoplasm or goitrous nodule reduces the chances of sampling Hashimoto's thyroiditis. To overcome this pitfall, aspiration on and around the nodule helps in sampling Hashimoto's thyroiditis.¹⁷

Two cases of Hashimoto's thyroiditis were associated with papillary carcinoma (1), and goiter (1) that showed cytopathological and histopathological correlation. The sensitivity of FNAC in the diagnosis of Hashimoto's thyroiditis was 50%.

On FNAC, 4 cases were suggestive of non-neoplastic and neoplastic lesions associated with cystic degeneration and on histopathology were diagnosed as non-neoplastic and neoplastic lesions with lymphocytic thyroiditis. This discordance occurred as the needle on FNA procedure aspirated only the cystic lesion and did not aspirate (reach) the area having lymphocytic thyroiditis.

Study done by Nguyen GK *et al.* had 5 cases diagnosed as follicular neoplasm on FNAC, but histopathology revealed follicular adenoma with Hashimoto's thyroiditis (2), follicular variant of papillary carcinoma with Hashimoto's thyroiditis (2), and hyperplastic follicular nodule with Hashimoto's thyroiditis (1). Seven cases of Hürthle cell tumor on FNAC were found to be associated with thyroiditis on histopathology. The cytodiagnostic sensitivity of Hashimoto's thyroiditis was 92%.¹⁶

The present study, had 5 cases suggestive of follicular neoplasm on FNAC, but histopathology revealed follicular adenoma with lymphocytic thyroiditis (3), Hashimoto's thyroiditis (1), and goiter with lymphocytic thyroiditis (1). The discordance in cytopathological and histopathological diagnosis of follicular adenoma with lymphocytic thyroiditis (Figure 3C) occurred as the aspiration needle on FNA did not aspirate (reach) the lymphocytic thyroiditis area. The discrepancy in cytopathological and histopathological diagnosis of nodular goiter with lymphocytic thyroiditis (Figure 3D) occurred as the cytological appearances of nodular goiter overlap with those of follicular adenoma.^[23] Smears from microfollicular areas in a nodular goiter may show a repetitive pattern of microfollicles or rosettes similar to a neoplasm if only such a focus is sampled.

MacDonald L and Yazdi HM study showed the cytodiagnostic sensitivity of Hashimoto's thyroiditis as 69%. Study revealed male to female ratio ratio of 1:14.5 and the age group ranged from 30-84 years with mean age 46 years. In their study, 3 cases of Hashimoto's thyroiditis with nodular goiter, 1 case of Papillary carcinoma with Hashimoto's thyroiditis and 1 case of Hürthle cell adenoma with Hashimoto's thyroiditis revealed both cytopathological and histopathological correlation.¹⁰

In the present study, cytodiagnostic sensitivity of Hashimoto's thyroiditis was 50%. Male to female ratio was 1:14 and the age group ranged from 20-50 years with mean age 43.1 years. The study revealed 1 case of Hashimoto's thyroiditis with nodular goiter, and 1 case of Papillary carcinoma with Hashimoto's thyroiditis diagnosed on both cytopathological and histopathology.

One case of Hürthle cell neoplasm with lymphocytic thyroiditis on FNAC was diagnosed on histopathology as Hürthle cell adenoma with granulomatous thyroiditis. On FNAC of a solitary nodule, smears showed Hürthle cells along with lymphocytes and suspicion of Hürthle cell neoplasm with lymphocytic thyroiditis was thought off. On histopathology, the diagnosis was Hürthle cell adenoma with granulomatous thyroiditis. (Figure 4 ABCD) This discordance occurred as the aspiration needle on FNA did not aspirate (reach) the granulomatous area.

Lymphocytic thyroiditis should not be diagnosed when only few lymphocytes are present. Small population of lymphoid cells and pleomorphic Hürthle cells from Hürthle cell neoplasm can be misdiagnosed as Hashimoto's

thyroiditis.¹⁰

Matti J Tikkanen *et al.* conducted a study in 32 patients to see the occurrence of hypothyroidism following subacute thyroiditis. The phases of subacute thyroiditis and the corresponding changes in thyroid hormone balance were proposed by Volpe *et al.* The 4 phases were: Phase I (Acute phase) - overtly hyperthyroid; Phase II – euthyroid; Phase III – overtly hypothyroid; Phase IV (Phase of recovery) – euthyroid. The authors concluded that permanent hypothyroidism is likely to develop after subacute thyroiditis only in the presence of autoimmune thyroiditis or after thyroid surgery.²⁶

Mizukami Y *et al.* studied histologically proven 601 cases of chronic thyroiditis and assessed the correlation of thyroid function to histologic findings. Histologically, chronic thyroiditis was classified into four groups as oxyphilic, mixed, focal, and hyperplastic. Based on thyroid profile levels thyroid function was divided into hyperthyroid, euthyroid, latent hypothyroid and overt hypothyroid. The study revealed oxyphilic cases as hypothyroid, mixed cases predominantly euthyroid and hypothyroid, focal cases euthyroid, and hyperplastic cases were hyperthyroid. The median age of patients in various groups were: oxyphilic – 44.3 years; mixed – 37.7 years; focal – 37.4 years; and hyperplastic – 32.9 years. The authors proposed 3 histologic criteria for Hashitoxicosis. Thyroid specimen is classified as belonging to mixed group when the patient is in hyperthyroid state and the specimen reveals more than 50% replacement by hyperplastic – changed epithelium.²⁷

In the present study, out of 30 cases, 5 cases were hypothyroid, oxyphilic type [Hashimoto's thyroiditis (4 cases) and Follicular adenoma with Lymphocytic thyroiditis (1 case)]. The remaining 25 euthyroid cases were of focal and mixed type. The median age of cases diagnosed as Hashimoto's thyroiditis was 35 years. The median age of hypothyroid cases was 35 years and euthyroid cases 30 years.

Sirpal YM study showed 78% sensitivity of FNAC in the diagnosis of Hashimoto's thyroiditis and concluded that the recognition of Hashimoto's thyroiditis is difficult if only inflammatory or epithelial component is present and may lead to false positive diagnosis of lymphoma or carcinoma.²⁸

Kollur SM *et al.* showed the incidence rates of Hashimoto's

thyroiditis coexistent with thyroid neoplasm and goitrous nodules as 15% and 3.5% respectively.¹⁷

The present study showed the incidence rates of Hashimoto's thyroiditis coexistent with thyroid neoplasm and goitrous nodules as 6.7% each.

The present study also showed the incidence rates of thyroiditis coexistent with thyroid neoplasm and goitrous nodules as 36.7% and 23.3% respectively.

Radetic M *et al.* studied reliability of FNAC and found 81% sensitivity and misdiagnosis in thyroiditis as 19%.²⁹ Present study showed sensitivity 66.7% and misdiagnosis in thyroiditis as 33.3%.

Ribeiro CA *et al.* has given the cytodiagnostic sensitivity of Hashimoto's thyroiditis as 81%.³⁰ Lerma E *et al.* has given the cytodiagnostic sensitivity of Hashimoto's thyroiditis as 67.5%.²⁴

Present study revealed 50% cytodiagnostic sensitivity of Hashimoto's thyroiditis. (Table 5)

To summarize, the causes of cytodiagnostic pitfalls were as follows:^{17,23,25}

1. Skill to perform FNA and pathologist experience in interpreting.
2. Low cell yield and suboptimal staining of cytologic material.
3. Paucity of lymphoid cells in burned out Hashimoto's thyroiditis.
4. Presence of hyperplastic follicular cells with nuclear pleomorphism.
5. Cytologic atypia occurring in autoimmune thyroiditis.
6. Diagnosis of Hashimoto's thyroiditis is difficult if only inflammatory or epithelial component is present.
7. Hashimoto's thyroiditis may dominate the smear and obscure neoplasia or neoplasia can obscure thyroiditis.
8. Epithelial preponderance over inflammation due to nuclear crowding, severe atypia, and cell discohesion should raise the possibility of a neoplasm in spite of other features of autoimmune thyroiditis.

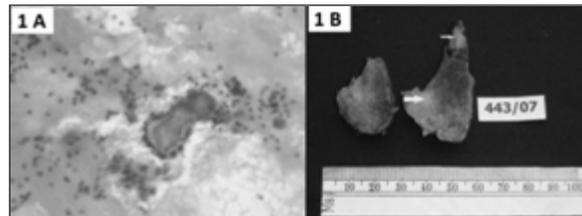


Figure 1A: Papillary carcinoma with Hashimoto's thyroiditis: Smear (40X) shows psammoma bodies, small cluster of follicular epithelial cells, few dispersed Hürthle cells and lymphocytes. 1B: Papillary carcinoma with Lymphocytic thyroiditis: Ill-defined grey-white area of papillary carcinoma (Thin arrow). Grey white area in the lower pole of lymphocytic thyroiditis: (Thick arrow); Colloid-filled brownish area in the centre

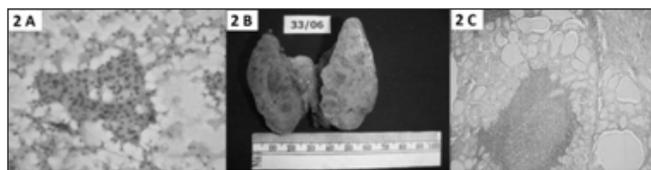


Figure 2: Hashimoto's thyroiditis: A: Smear (40X) shows cluster of follicular epithelial cells with few Hürthle cells, epithelioid cells and lymphocytes in the lymphocytic background. B: Gross specimen shows grey-brown to tan areas with colloid and few grey-white areas. C: Photomicrograph (10X) showing lymphoid follicle with germinal centre and follicular epithelial cells revealing Hürthle cell change.

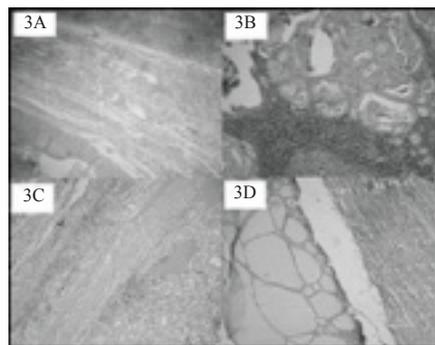


Figure 3A: Photomicrograph (4X) of follicular adenoma with Hashimoto's thyroiditis showing lymphoid aggregates outside the capsule of adenoma. 3B: Photomicrograph (10X) of colloid goiter with Hashimoto's thyroiditis showing focus of Hashimoto's thyroiditis revealing lymphoid follicle with germinal centre. 3C: Photomicrograph (10X) showing follicular adenoma with lymphocytic thyroiditis showing dense lymphocytic infiltrate outside the capsule of adenoma. 3D: Photomicrograph (10X) of nodular goiter with lymphocytic thyroiditis showing Lymphocytic thyroiditis outside the nodular goiter.

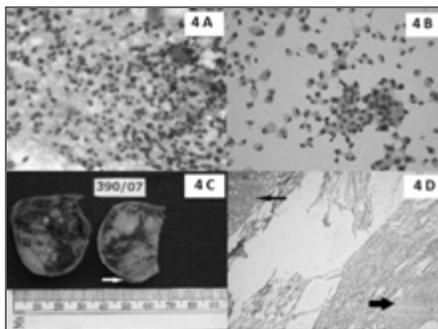


Figure 4A: Hürthle cell neoplasm with lymphocytic thyroiditis: Smear (40X) showing follicular epithelial cells admixed with lymphocytes. 4B: Smear (40X) showing predominantly Hürthle cells with few lymphocytes. 4C: Gross specimen showing a well-circumscribed, capsulated lesion with solid grey-white areas and colloid-filled hemorrhagic areas (Hürthle cell adenoma); grey-white area outside the capsule of granulomatous foci (Arrow). 4D: Photomicrograph (4X) of Hürthle cell adenoma (Thin arrow) with granulomatous thyroiditis (Thick arrow)

Conclusion:

The inflammatory disease of thyroid (thyroiditis) constitutes a major junk of total thyroid diseases. The diagnosis of thyroiditis includes the preliminary tests like FNAC and biochemical thyroid profile. With the aid of these tests it is now possible to avoid the unnecessary and unindicated thyroid surgeries. The present study brought out the utility of preliminary tests and also the pitfalls associated with them. The reasons for the pitfalls in cytodagnosis and discordance in cytopathological and histopathological correlation were studied and the solutions to curtail these discrepancies discussed.

In spite of the fallacies of FNAC of thyroid gland, with proper technique; viz multiple punctures at multiple sites, it is possible to eliminate the cytopathological and histopathological discordance and increase the sensitivity of this baseline test.

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