Original Article

Clinico Pathological Study of Hashimoto's Thyroiditis and Its Management

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Abstract

Background: Hashimoto's thyroiditis (HT) is the most common cause of goitre and hypothyroidism in iodine-sufficient regions. It is an autoimmune disorder characterized by lymphocytic infiltration, antibody positivity, and variable clinical presentation. This study was conducted to analyze the clinical profile, thyroid status, cytological features, and management outcomes of patients with Hashimoto's thyroiditis. **Material and Methods:** A prospective observational study was carried out on 30 patients presenting with thyroid swelling. Detailed history, clinical examination, thyroid function tests (T3, T4, TSH), anti-thyroglobulin (ATG) and anti-microsomal antibodies (AMA), and fine needle aspiration cytology (FNAC) were performed. Management included levothyroxine therapy, antithyroid drugs with beta-blockers, or surgery depending on thyroid status and symptoms. **Results:** The majority of patients were females (96.7%), with a mean age of 36 ± 10 years. All presented with goitre, with compressive symptoms in 2 patients, toxic features in 2, and pain in 1 patient. Diffuse goitre was the predominant presentation (57%), followed by multinodular goitre (40%) and solitary thyroid nodule (3%). Thyroid status showed 57% hypothyroid, 30% euthyroid, and 13% hyperthyroid cases. FNAC revealed Hashimoto's thyroiditis in 97% and colloid goitre in 3%. Lymphocytic infiltration was the most common cytological finding (94%), followed by Hurthle cell change and lymphoid follicle formation. Both ATG and AMA were positive in 64% of patients, and 83% of hypothyroid patients had antibody positivity. Levothyroxine was given to 25 patients, 2 received neomercazole with propranolol, and 3 underwent surgery. **Conclusion:** Hashimoto's thyroiditis predominantly affects middle-aged women and commonly presents with diffuse goitre and hypothyroidism. Antibody positivity and lymphocytic infiltration are key diagnostic features. Early recognition and appropriate treatment with levothyroxine or surgery in select cases help achieve favorable outcomes.

Keywords: Hashimoto's thyroiditis, autoimmune thyroid disease, diffuse goitre, hypothyroidism, antibody positivity.

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Introduction

Hashimoto's thyroiditis is the most common and clinically significant type of thyroiditis. HT is seen commonly in middle-aged females and one of the most common causes of goitre seen in iodine sufficient regions.[1] The initial step is the activation of CD4 (helper)T-lymphocytes specific for thyroid antigens. Once activated, self-reactive CD4 T cells can stimulate autoreactive B cells to be recruited into the thyroid and to secrete thyroid antibodies against thyroid peroxidase, thyroglobulin, and stored thyroid hormone, which finally leads to hypothyroidism.[2] This disease occurs most commonly in women over the age of 40, with a family history of thyroid disease or autoimmune diseases like Type 1 diabetes/Adrenal insufficiency. Many cases of early Hashimotos thyroiditis missed or misdiagnosed. The data available in the region was insufficient, and this study improves the diagnostic accuracy and the better modality of treatment with particular emphasis on surgery.

Materials and Methods

During this study period (November 2018 to March 2020), 30 cases of Hashimoto's thyroiditis admitted to Narayana medical college and hospital. All the patients came to the surgical outpatient with thyroid swelling are thoroughly examined with more emphasis on pulse rate, temperature and blood pressure. The patient is to undergo a thyroid profile first followed by FNAC done by a senior pathologist with a 23-25G needle. If the FNAC shows lymphocytic infiltration, then the patient is subjected to autoantibody assay. If the patient doesn't have HT features on FNAC, but the patient has overt hypothyroidism, the patient subjected to antibody assay. If the patients are hyperthyroid on the hormonal assay, they are subjected to anti-thyroid drugs and then we do FNAC.

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Inclusion Criteria

All the patients of age group of 14-60 years both males and females diagnosed as Hashimoto's thyroiditis,

Exclusion Criteria

All patients diagnosed to have thyroid malignancy and Pregnant women.

According to the functional status of thyroid and presenting symptoms, all the patients will get treated. Hypothyroid patients treated with Levothyroxine, Hyperthyroid patients treated with Neomercazole and Propranolol. All the patients asked to come for follow up at three-month intervals.

inally, the patients who undergo surgery should assess for a separate set of preoperative investigations like ECG, chest X-ray, routine blood and urine examination, indirect laryngoscopy for vocal cords. They were duly certified as fit for surgery by the physician. A postoperative histopathological examination has done and the findings recorded in the proforma. All the subjects informed about the procedure and consent taken before participating in the study.

Statistical Analysis: The FNAC and thyroid hormonal assay correlated with the serological parameters using the chi-square test in Microsoft XL software, where P value ≤0.05 considered statistically significant.

Results

From the prospective observational study done on 30 cases diagnosed as Hashimoto's thyroiditis from November 2018 to March 2020, the following results obtained. During the study of thirty patients of Hashimoto's thyroiditis, twenty-nine are females and one male.

Table 1: Demographic distribution in present study

Age in years	Number of subjects (n=30)	Percentage (%)
<20	2	6
20-29	5	17
30-39	12	40
40-49	8	27
>50	3	10
Gender		
Female	29	96.7%
Male	1	3.3%

The age of the subjects in the study ranged from 14-60 years. The youngest being a 14-year-old age girl and the oldest being a 60 years old woman. Most cases were in the third decade of life. The most commonly presented age group in this study is the 3rd and 4th decade of life. The mean age is 36±10 years. According to our research, the most common presentation is between 30-49years of age.

Table 2: Symptoms and Clinical presentation of swelling in present study

Symptoms	Number of cases (n=30)	Percentage (%)
Goitre	30	100
Toxic symptoms	2	6
Obstructive symptoms	2	6
Pain	1	3
Change in voice	0	0
Clinical presentation of swelling		
Diffuse goitre	17	57
Multinodular goitre	12	40
Solitary nodule	1	3
Thyroid status		
Hypothyroid	17	57
Euthyroid	9	30
Hyperthyroid	4	13

All the patients in our study are present with thyroid swelling, and few of them are with toxic symptoms and compressive features. Only two patients presented with toxic symptoms, obstructive symptoms, and only one patient complained of pain. seventeen complained of diffuse goitre, twelve have a multinodular goitre and one has a solitary nodular goitre. In the present study, 57% of patients presented with diffuse goitre, 40% with multinodular goitre and, 3% with a solitary nodular goitre. Seventeen (57%) out of thirty patients are hypothyroid; nine (30%) are in the euthyroid state; only four (13%) are in the hyperthyroid state.

Table 3: Duration of swelling

Duration of swelling	Number of cases (n=30)	Percentage (%)
0-6 months	14	47
6-12 months	11	37
1-2 years	3	10
2-3 years	2	6
>3 years	0	0

Out of 30 cases, fourteen patients presented within six months, and, eleven patients have a duration of 6-12 months. most of the cases presented within six months of presentation of swelling followed by patients within one year. 47% of cases presented within six months, 37% of cases presented within 6-12 months, 10% of patients came within 1-2 years, and 6% of subjects in the study went to the hospital in 2-3 years of onset of swelling.

All thirty cases underwent FNAC for the cytopathological diagnosis of the thyroid disease and analysed the results. Out of 30 patients, 29(97%) diagnosed as Hashimoto's thyroiditis and only one (3%) case reported as colloid goitre.

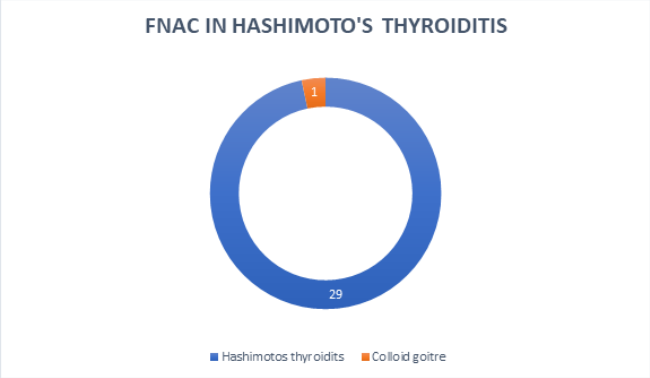


Figure 1: FNAC diagnosing hashimoto's thyroiditis

Table 4: Cytomorphological features on FNAC

Cytomorphological Features	Number of cases (n=30)	Percentage (%)
Lymphocytic infiltration	28	94
Background lymphocytes	24	80
Hurthle cell changes	16	53
Eosinophilic infiltration	10	33
Germinal centre	8	27
Lymphoid follicles	6	20
Anisonucleosis	5	17
Giant cell	3	10

In our study, lymphocytic infiltration (94%) of the thyroid gland predominates HT's pathological picture, followed by Hurthle cell changes and eosinophilic infiltration.

Table 5: Autoantibodies at presentation:

Antibodies	Number of cases (n=30)	Percentage (%)
Both AMA and ATA Positive	19	64
Both AMA and ATA negative	2	6
Only AMA positive	8	27
Only ATA positive	1	3

In the present study, both AMA and ATA are positive in 19 cases, both are negative in 2 patients, only AMA positive in 8 subjects, and only one tested positive for only ATA.

In the present study, 64% of study subjects are positive for both AMA, ATG. 27% of cases are positive for only AMA, only 3% of patients reported with only ATG. Both the antibodies, i.e., AMA, ATG, tested negative in 6% of study subjects. In the present study, Combined seropositivity of AMA and ATG is more than the positivity of AMA alone when considered for diagnosing HT.

Table 6: Clinical findings and thyroid status

Clinical/Laboratory Findings	Hypothyroid	Euthyroid	Hyperthyroid
Number of cases	17	9	4
Diffuse goitre	9	6	2
Multinodular goitre	8	2	2
Solitary nodule	0	1	0

In the present study, among thirty cases, Hashimotos thyroiditis 17 are hypothyroid of which nine are with diffuse goitre and 8 with MNG. Nine patients presented with Euthyroid state of which 6 are diffuse goitre, two are with MNG and 1 with a solitary nodule. Four patients are in the hyperthyroid state of which two are diffuse goitre, and two are MNG.

In the present study, the majority of diffuse goitres presented with hypothyroidism, followed by Euthyroidism. Most of the multinodular goitres are in a hypothyroid state. Only one solitary nodule case reported in our study, that is in the euthyroid state. Out of four hyperthyroid cases, two are diffuse goitre, and the other two are MNG.

Table 7: Thyroid status and autoantibodies

Thyroid status and antibodies	Hypothyroidism	Euthyroidism	Hyperthyroidism
Number of cases	17	9	4
Both AMA and ATG positive	12	4	3
Both AMA and ATG negative	2	0	0

Only AMA positive	2	5	1
Only ATG positive	1	0	0

Among thirty patients presented with Hashimotos thyroiditis, seventeen had hypothyroidism, out of which both antibodies positive in 12, both antibodies negative in two cases, only AMA positive in two patients, and only ATG positive in one patient.

Nine patients had Euthyroidism, out of which four tested positive for both antibodies, and five were positive for only AMA. Only ATG positive patients have not reported in euthyroid cases. No case is there with both antibodies negative in Euthyroid subjects.

There are 4 cases of hyperthyroidism of which, both antibodies positive in three cases, only AMA positive in one patient.

Table 8: FNAC and antibodies

FNAC and Antibodies	Hashimoto's thyroiditis	Colloid goitre
Number of cases	29	1
Both AMA and ATG positive	18	1
Both AMA and ATG negative	2	0
Only AMA positive	8	0
Only ATG positive	1	0

Twenty-nine patients who are positive for Hashimoto's thyroiditis in FNAC are almost all positive for anyone antibody or both. Only two cases of FNAC diagnosed Hashimoto's thyroiditis are negative for antibodies.

Out of thirty, only one case diagnosed as colloid goitre in FNAC tested positive for both antibodies.

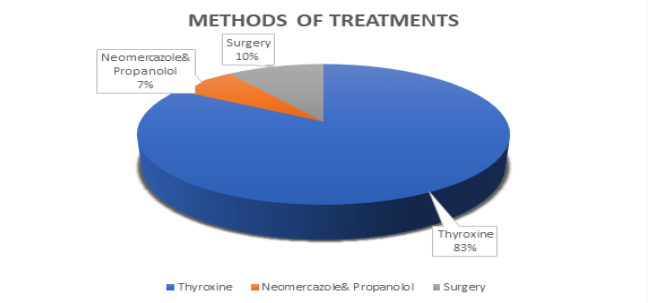
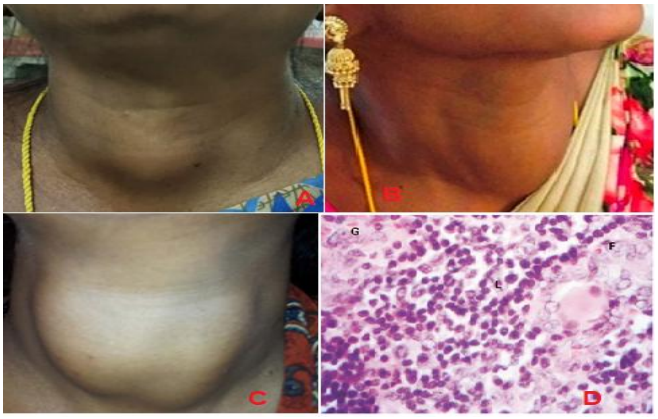


Figure 2: Methods of treatments

Out of 30 patients, 25 patients respond to levothyroxine and treated with two patients treated with Neomercazole and Propranolol. Only three patients underwent surgery, two of them subtotal and one total thyroidectomy. Two out three patients who underwent surgery presented with obstructive symptoms and one patient is not responsive to medical therapy. No postoperative complications observed.



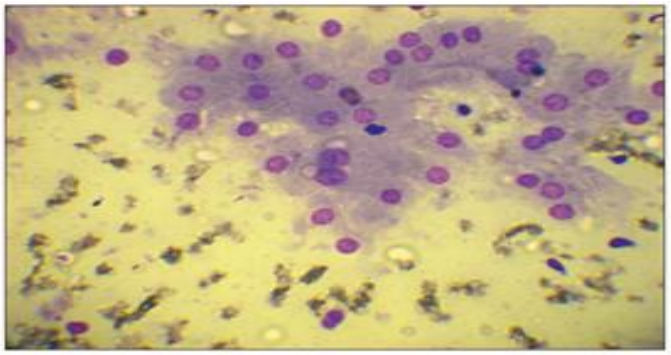


Figure 3: Images in present study. A. Solitary nodule of thyroid. B. Diffuse goiter. C. Multinodular Goitre. D. Pathological picture of HT. E. Picture showing lymphocytic and eosinophilic infiltration with Hurthle cell changes.

Discussion

In the current study, a total of thirty cases of Hashimoto's thyroiditis detected either by FNAC, antibodies or final histopathological report and treated accordingly. In this study, the incidence of age ranged from 14-60 years, but most of Hashimoto's thyroiditis patients presented between 30-39 years, followed by 40-49 years. Average age incidence in our study is 36±10 years. According to Sri Lekha et al,[3] the average incidence is 33.45 years, and highest incidence ranged from 30-39 years. M. Purnaiah and G. Rakesh et al,[4] advocated that the average age of incidence is 33.45 years and the highest incidence in 30-39 years age group. In Pooja Jain et al,[1] study, the mean age is 42.47 years and highest incidence in 30-50 years age group. According to Oruganti Shankar et al,[5] the mean incidence of age is 33.45years with a peak occurring at 30-39 years. Chandanwale et al,[6] age incidence range of 21-40 years.

Present study age groups are similar to Sri Lekha et al,[3] M. Purnaiah and G. Rakesh et al,[4] Oruganti Shankar et al,[5] Chandanwale,[6] but the average age are higher in Pooja Jain et al.[1]

In the present study, the females are predominant subjects with 29(96.7%) and only one male case (3.3%) is there. According to Chandanwale et al,[6] the male to female ratio is 1:14.7 showing female predominance. In Oruganti Shankar et al,[5] study, this

ratio is 1:39. Male to female ratio in Pooja Jain et al,[1] is 1:9. Male to female ratio of 1:14 recorded in Purnaiah and G. Rakesh et al,[4] Sri Lekha,[3] reported 1:30. Autoimmune thyroid diseases consistently have a strong female preponderance.

All the studies showing similar ratios and the present study results correspond with Sri Lekha et al,[3] M. Purnaiah and G. Rakesh et al,[4] Oruganti Shankar,[5] Chandanwale et al,[6] Pooja Jain et al.[1] As the female ratio is very high in our study, the reason may be the small sample size.

All the cases in this study presented with goitre(n=30), and with additional hyperthyroid features in two cases and compressive features in two patients. According to Sri Lekha et al,[3] the majority are with goitre. M. Purnaiah and G. Rakesh et al,[4] also had similar findings. In the study of Pooja Jain et al,[1] (97.2%) of patients presented with thyroid swelling, very few were with toxic and compressive features. Oruganti Shankar et al,[5] and Chandanwale et al,[6] also reported similar findings.

The present study corresponds with the results of Sri Lekha et al,[3] M. Purnaiah and G. Rakesh et al,[4] Oruganti Shankar et al,[5] Chandanwale et al,[6] Pooja Jain et al,[1] in terms of clinical presentation.

In the present study, diffuse goitre (57%) is the predominant presentation of all the thyroid swelling followed by multinodular goitre (40%). In Chandanwale et al,[6] most patients (n = 73) had diffuse enlargement of the thyroid, 34 patients of MNG and three had solitary nodules.

Nguyen et al,[7] study had discrete nodular goitre in a significant number of cases.

Primary presentation of goitre in Oruganti Shankar et al,[5] was MNG (62.5%) followed by diffuse (35%). In the study of M. Purnaiah and G. Rakesh et al,[4] most of the cases were 60%- Multinodular goitres, 30% being diffuse goitres and 10% solitary nodules.

In Sri Lekha et al,[3] Out of 93 cases, Fifty-eight cases presented as multinodular goitre, 33 patients as diffuse enlargement and two presented as a solitary nodule. In Bhatia et al,[8] 68 (89.47%) had a diffuse goitre, 2 (2.63%) had a nodular goitre, and 6 (7.9%) had no goitre. In Tomas et al,[9] 68 patients had a diffuse goitre, 28 had MNG, and 4 had solitary nodule. In Rathi et al,[10] 68% are with diffuse goitre and 32% with nodular goitre.

The present study findings are in coordinance with Chandanwale et al[6], Bhatia et al,[8] Thomas et al,[9] Rathi et al,[10] Anila et al,[11] Nguyen et al,[7] and Sahoo et al,[15] But MNG is more in Shankar et al,[5] M. Purnaiah and G. Rakesh et al,[4] and Sri Lekha et al.[3] In classic Hashimoto's disease (goitrous autoimmune thyroiditis), the thyroid gland, including the pyramidal lobe if present, is diffusely enlarged, its consistency is firm and its surface is often irregular.

In the present study, the duration of swelling in most cases is 0-6 months, followed by 6-12 months which is similar to Sri Lekha et al,[3] Shankar et al,[5] Thomas et al.[9] Nodules are seen in early stages of disease when clinical and hormonal changes not established yet. According to the hormonal assay of 30 patients in the present study, hypothyroidism noted in 17(57%), Euthyroid in 9(30%), and hyperthyroidism in four (13%).

In the study of Sahoo et al,[15] out of 85 patients, 39 were hypothyroid, 32 were Euthyroid, and four were hyperthyroid cases. Anila et al,[11] reported hypothyroidism in 18(30%) cases, 39 patients with Euthyroidism. In Rathi et al,[10] study, 23 (56.09%) patients were hypothyroid, 15(36.58%) were Euthyroid, and 3(7.31%) were hyperthyroid. Thomas et al,[9] reported 64 cases of hypothyroidism, 46 cases of Euthyroidism and 30 hyperthyroidism. In Bhatia et al,[8] study, 75 patients reported hypothyroidism and only one patient in the euthyroid state.

Out of 100 patients, 62 patients were hypothyroid,13 were euthyroid, 25 patients were in the hyperthyroid state in the study of Chandanwale et al.[6] The study course of Shankar et al. reported 57 patients of Hypothyroid (47.5%), 42 patients of Euthyroid (35%) and 21 patients of Hyperthyroid (17.5%). Present study findings correspond with all the studies except for Kumar et al,[12] whose study reported more hyperthyroid cases.

As per the FNAC findings in the present study, 29(97%) patients are positive for Hashimoto's thyroiditis and only one (3%) patient diagnosed as colloid goitre. In the study course of Purnaiah and G. Rakesh et al,[4] 54(90%), patients had features suggestive of HT and 6(10%) had a colloid goitre on FNAC. Shankar et al,[5] reported 111(92.5%) cases of Hashimoto's thyroiditis on FNAC, and nine(7.5%) patients reported having a colloid goitre. Similarly, in Sri Lekha et al,[3] 86(92.5%) patients were diagnosed with Hashimoto's and 7(7.5%) cases to have a colloid goitre. Chandanwale.[6] A study showed 100 patients of Hashimoto's thyroiditis, rest of 10 patients diagnosed as thyroiditis. The present study results coordinate with Chandanwale et al,[6] Sri Lekha et al,[3] Shankar et al,[5] and Purnaiah and G. Rakesh et al,[4] FNAC is accurate, with results showing the positive per cent of greater than 90%.

Table 9: Studies comparing cytomorphological features of ht

Cytomorphological features	Present study (2020)	Rathi et al,[10]	Jayaram et al,[13]	Handa et al,[14]	Bhatia et al,[8]	Sahoo et al,[15]	Chandanwale et al,[6]	Singh et al,[16]
Number of cases	30	50	88	119	76	102	100	150
Lymphocytic infiltration	28(94%)	36(72%)	69%	Not recorded	76(100%)	100%	79(79%)	Not recorded
Background lymphocytes	24(80%)	Not recorded	Not recorded	Not recorded	75(98%)	Not recorded	100(100%)	Not recorded
Hurthle cell changes	16(53%)	37(74%)	56%	Not recorded	30(40%)	87.25%	64(64%)	70%
Eosinophilic infiltration	10(33%)	24(48%)	17%	Not recorded	Not recorded	7.8%	Not recorded	14%
Germinal centre	8(27%)	Not recorded	Not recorded	Not recorded	13(17%)	Not recorded	Not recorded	Not recorded

Lymphoid follicles	6(20%)	27(54%)	67%	Not recorded	15(20%)	Not recorded	Not recorded	Not recorded
High lymphoepithelial cell ratio	Not recorded	39(78%)	39%	40.3%	Not recorded	67.3%	Not recorded	75.3%
Anisonucleosis	5(17%)	Not recorded	Not recorded	Not recorded	20(19%)	Not recorded	19(19%)	Not recorded
Follicular atypia	Not recorded	18(36%)	44%	Not recorded	Not recorded	Not recorded	Not recorded	Not recorded
Fire flares	Not recorded	2(4%)	23%	3.4%	Not recorded	13.7%	3(3%)	6.7%
Giant cell	3(10%)	3(6%)	39%	8.4%	25(32%)	29.4%	18(18%)	38%

In the present study, of all the 30 patients who underwent FNAC, 28 patients showed lymphocytic infiltration,24 cases reported to have background lymphocytes,16 have Hurthle cell changes, ten patients had eosinophilic infiltration and also some other features like germinal centre formation, giant cells anisonucleosis reported.

This study is in concordance with Rathi et al,[10] Chandanwale et al,[6] Bhatia et al,[8] Sahoo et al,[15] Handa et al,[14] Singh et al,[16] Jayaram et al,[13] reported a slightly high number of giant cells.

In the present study, both AMA and ATA are positive in 19 cases; both are negative in 2 patients, only AMA positive in 8 subjects, and only ATA positive for one patient.

In the study of Chandanwale et al,[6] out of 71 cases, 47(66%) had elevated titres of anti-TPO antibodies, which is similar to Bhatia et al,[8] 46/70 (65.71%) positive for anti-TPO antibodies. Rathi et al,[10] study antibody tires had done for 22 cases out of which 9(81.81%) were positive for anti-TPO antibodies, and 7(63.63%) were for anti-thyroglobulin antibody.

78.82% of cases positive for anti-TPO antibody and the negative serology in 21.18% in Sahoo et al,[15] Singh et al,[16] TPO was positive in 119 (79.3%), and anti-Tg was positive in 101 (67.3%) patients, while a combination of TPO and anti-Tg positivity seen in 87 (58%) cases. Seventeen (11.3%) subjects were negative for both antibodies.

Table-10: Studies showing raised antibodies

Study	AMA positive	ATG positive	Both positive	Negative	Cases tested for antibodies
Present study	27(90%)	20(66%)	19(63%)	2(7%)	30
Chandanwale et al[6]	47(66)	Not tested	Not tested	24(34%)	71
Bhatia et al[8]	46(66%)	Not tested	Not tested	24(34%)	70
Rathi et al[10]	9(41%)	7(32%)	Not recorded	6(27%)	22
Sahoo et al[15]	78.82%	Not tested	Not tested	21.18%	102
Singh et al[16]	119(79%)	101(67%)	87(58%)	17(11%)	150
Jayaram et al[13]	27(93%)	24(83%)	Not recorded	2(6.8%)	29
Purnaiah and G. Rakesh et al[4]	45(75%)	34(56%)	31(52%)	12(20%)	60
Sri Lekha et al[13]	75(80%)	53(57%)	47(50%)	12(13%)	93
Pooja Jain et al[1].	7(78%)	Not tested	Not tested	2(22%)	9
Shankar et al[5]	96(80%)	69(57%)	60(50%)	15(13%)	120
Thomas et al[9]	96%	94%	Not reported	Not reported	100%
Anila et al.[11]	57(95%)	40(67%)	38(63%)	1(1.6%)	60

The present study reported combined seropositivity of 93%, which is similar to Singh et al,[16] Purnaiah and G. Rakesh et al,[4] Sri Lekha et al,[3] Shankar et al,[5] Anila et al.[11]

Among thirty patients in the present study, seventeen reported to have hypothyroidism, out of which antibodies titres raised in 15 cases and 2 cases had titres within normal limits. All the euthyroid and hyperthyroid patients are positive for antibodies, similar to Sri Lekha et al, Sankar et al.[3,5]

In the present study, there is no statistical correlation between cytomorphology on FNAC and serology (p-value =0.896681614), which is similar to Bhatia et al,[8] compared cytological grades with biochemical values. There is also no significant association between the functional status of thyroid and seropositivity (p-value=0.297042762). Kumar et al,[4] carried out a correlation of severity of lymphocytic infiltration on smears with thyroid hormonal and antibody status; however, no significant correlation found in their study.

In Sood et al,[17] Grade 3 lymphocytic infiltration showed a statistical correlation with TPO and TSH together or TSH alone but not with anti- TPO alone. Anti-TPO and TSH together are significant even if no lymphocytic infiltration is present. The Presence of Hurthle cell change giant cells and granulomas have no statistical correlation with anti-TPO and TSH, which is similar to the present study. The study of Saraf et al,[18] was able to establish an association between the cytomorphology and serology. The Anti TPO raised more in hypothyroid patients and found a correlation between TPO and thyroid status which is not concordant with the present study.

According to Sahoo et al,[15] Hurthle cell change has correlated with hypothyroidism ($P < 0.05$), but there was no significant association with the anti-TPO antibody. Statistical correlation of different cytological grades with the anti-TPO antibody was there ($P < 0.05$), however the thyroid hormone profile with cytomorphology and TPO level were not significant ($P > 0.05$). According to Shetty et al.[19] There was no significant statistical correlation of cytological grades with thyroid status. Sharma et al,[20] observed that cytological grading into mild, moderate, and severe thyroiditis correlates poorly with clinical, biochemical,

and ultrasonographic findings; however, TPO antibodies presence correlates well with cytology.

Thomas et al,[9] showed no association between the thyroid status and antibody positivity and cytologic parameters, similar to the present study. Zhang et al,[21] study has shown that the immunological characteristics of TgAb might relate to HT progression, and patients with high TgAb avidity might be at increased risk of progressing to thyroid function failure. According to Singh,[16] Macrophages and fire flares in FNAC are strongly associated with thyroid hormonal assay, and A high lymphoepithelial ratio has significantly associated with TPO positivity. The TPO didn't show any correlation with other cytological features. The thyroid gland's functional status did not show a statistically significant correlation with either TPO ($p = 0.07$) or anti-Tg positivity ($p = 0.08$).

Anila et al,[11] advocated that there was no correlation between the cytological grades of thyroiditis and serum values of ATG, ATPO, and TSH, similar to the present study. According to Saygılı et al,[22] combined anti-TPO and Anti-Tg antibodies increase the chances for diagnosing HT rather than using only one antibody. Fine-needle aspiration cytology is superior to other sophisticated methods in diagnosing HT, even in seronegative cases. Fine needle aspiration cytology continues to be a diagnostic tool of significance in diagnosing Hashimoto's thyroiditis.

Fine needle aspiration (FNA) plays a significant role in diagnosing thyroid lesions due to its simplicity and low cost. Minimising sampling errors, and accurate evaluation of cytological features help reduce the false-negative results in diagnosing Hashimoto's thyroiditis. A combined approach, including FNAC, serology, thyroid hormonal assay, and imaging techniques, maximises Hashimoto's thyroiditis diagnostic accuracy. TPO Ab was more sensitive than ATG Ab in predicting hypothyroidism. Similarly, TPO Ab was more sensitive than ATG Ab in autoimmune thyroiditis

Out of thirty patients in the present study, 25 treated with Levothyroxine two treated with Propranolol & Neomercazole, and 3(10%) underwent surgery. The surgery indications are compressive symptoms in 2 patients, and one patient is not responsive to medical treatment.

Patients with medical treatment followed for every three-month interval, and at every visit, the pulse, weight, consistency of the gland and diameter of the neck recorded. All the patients became euthyroid and size reduction noticed in all patients with diffuse goitre but not in MNG and for them surgery advised, but they were not willing for surgery. According to Villar,[23] Levothyroxine replacement therapy for subclinical hypothyroidism did not improve survival or decreased cardiovascular morbidity.

In the study of Sankar et al,[5] 15(12.5%) patients underwent surgery, six patients for obstructive symptoms, other nine patients underwent subtotal thyroidectomy for colloid goitres, and histopathology revealed as Hashimoto's Thyroiditis, which is similar to present study.

Purnaiah and G. Rakesh et al,[4] study showed eight patients underwent surgery, of these 6 were colloid goitres and underwent subtotal thyroidectomies, later on, diagnosed as Hashimoto's thyroiditis by histopathology. Two patients underwent surgery because of cosmetic purpose and obstructive symptoms, similar to the present study and Srilekha et al.[3] Hashimoto's thyroiditis is a cause for diffuse or nodular goitre which may impinge on vital structures in the neck. Thyroidectomy is a safe and effective treatment for the relief of compressive symptoms.

The incidences of transient complications are higher in patients with thyroiditis. Careful analysis of surgical indications will avoid unnecessary surgery in thyroiditis cases. Thyroidectomy can perform in patients with HT with a low risk of permanent surgical complications, as malignancy is common in patients who have a thyroidectomy for HT even when not suspected preoperatively. In some selected cases, surgical treatment may become necessary for effective and permanent control of symptoms and local signs in painful HT. Total thyroidectomy is an effective and reliable treatment for patients with recurrent painful Hashimoto's thyroiditis.

Conclusion

Hashimoto's thyroiditis is the most common cause of goitrous enlargement with hypothyroidism. It is common in the 3rd and 4th decades of life. Females are more affected than males. The majority of patients were with diffuse goitre. Hypothyroid patients were predominant than euthyroid and hyperthyroid. FNAC plays a significant role in diagnosing HT rather than serology alone. A combined approach with thyroid hormonal assay, FNAC, serology, and imaging techniques improves Hashimoto's thyroiditis diagnostic accuracy. There is no significant correlation between cytological features(p-value =0.896681614) and hormonal assay(p-value=0.297042762) with thyroid antibodies. Medical management with levothyroxine and thyroid suppression therapy is the main line of treatment. Surgical therapy opted when there is compressive symptoms, pain, recurrent thyroiditis and cosmetic purposes.

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Conflicts of interest

There are no conflicts of interest.

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