

**Original Research Article****Cytomorphological Study of Chronic Lymphocytic Thyroiditis****Aarti P. Pachrupe<sup>1</sup>, Varsha M. Dhume<sup>2</sup>, Vikas Kavishvar<sup>3</sup>, P. Varthakavi<sup>4</sup>**

<sup>1</sup>Assistant Professor, Department of Pathology, P.D.V.V.P.F'S Medical College, Ahmednagar Maharashtra 414111, India. <sup>2</sup>Associate Professor <sup>3</sup>Additional Professor, Department of Pathology, <sup>4</sup>Professor, Department of Endocrinology, Topiwala National Medical College, Mumbai, Maharashtra 400008, India.

**Abstract**

**Introduction:** Chronic lymphocytic thyroiditis (CLT) is included in non-neoplastic thyroid lesions. These are autoimmune disorders characterized by inflammation of thyroid with variable clinical features of altered thyroid function. It has prevalence rate of 1-4% and incidence of 30-60/100000 population per year. It is more common in middle aged women. There is rise in the incidence and diagnosis of CLT due to iodine supplementation of diet and improved diagnostic techniques respectively.

**Corresponding Author:**

**Varsha M. Dhume**  
Associate Professor,  
Department of Pathology,  
Topiwala National Medical  
College, Mumbai, Maharashtra  
400008, India.  
E-mail: aartikbuge@gmail.com

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**Aims and Objectives:** To study clinical presentation and cytological parameters of CLT in detail and study these parameters with respect to cytological grades.

**Material and Methods:** Total 313 cases of CLT diagnosed on cytology were included in the study. FNAC was done using non-aspiration technique. All the cases were analysed for age, sex and clinical presentation. Cytological parameters were studied in detail and based on these parameters, cases were graded as per Bhatia et al's criteria.

**Results & Discussion:** Clinically all the cases presented with anterior neck swelling, followed by hypothyroid and hyperthyroid symptoms. Amongst cytomorphological parameters, background lymphocytes were noted in all 3 grades with varying percentages of other parameters.

**Conclusion:** Clinical presentation of lymphocytic thyroiditis varies depending on the stage of disease, but careful evaluation of all cytological parameters can make correct diagnosis of CLT.

**Keywords:** Chronic Lymphocytic Thyroiditis; FNAC; Lymphocytes.

**Introduction**

Thyroid diseases are, among the commonest endocrine disorders worldwide. According to a projection from various studies on thyroid disease, it has been estimated that about 42 million people in India suffer from thyroid diseases [1]. Both non-neoplastic and neoplastic diseases affect the thyroid gland. Chronic lymphocytic thyroiditis (CLT) is included in the non-neoplastic lesions. There is rise

in the incidence and diagnosis of CLT due to iodine supplementation of diet and improved diagnostic techniques respectively [2].

Today, a change in trend has been observed in its clinical presentation and functional status. At preliminary level, where higher investigations such as USG, TFT, Anti-thyroid antibody estimation are not available, FNAC proves to be excellent, cost effective, simple method for morphological diagnosis of thyroid lesions [3].

### Aims and Objectives

To study clinical presentation and cytological parameters of CLT in detail and study these parameters with respect to cytological grades.

### Material and Methods

This is a prospective and retrospective study of FNAC of thyroid done in pathology department of a tertiary care hospital.

Total 313 cases of chronic lymphocytic thyroiditis diagnosed on cytology were selected for this study. Of these cases 165 were included in prospective group and 148 were in retrospective group.

#### for FNAC,

1. Informed written consent was taken.
2. Clinical details and investigations were noted in prescribed case record form.
3. Depending upon thyroid gland examination findings FNAC site/sites were chosen i.e. for diffuse swelling: both lobes-2 passes each. For Solitary thyroid nodule: 2 passes, 1 from the nodule and 1 from the surrounding thyroid if palpable.

#### FNAC Procedure

1. For FNAC-23 gauze needle was used and performed using non-aspiration technique
2. For each FNAC alcohol fixed smears stained with Papinicolou (Pap) stain and air dried smears stained with MGG stain were used.

3. For colloid fluid aspirate-smears from sediment were prepared.
4. For non-palpable nodules-USG guided FNAC was performed.

#### Inclusion Criteria

All the cases of lymphocytic thyroiditis diagnosed on cytology Cytomorphological parameters were studied in detail and cases of lymphocytic thyroiditis were graded as per Bhatia et al's grading system [4].

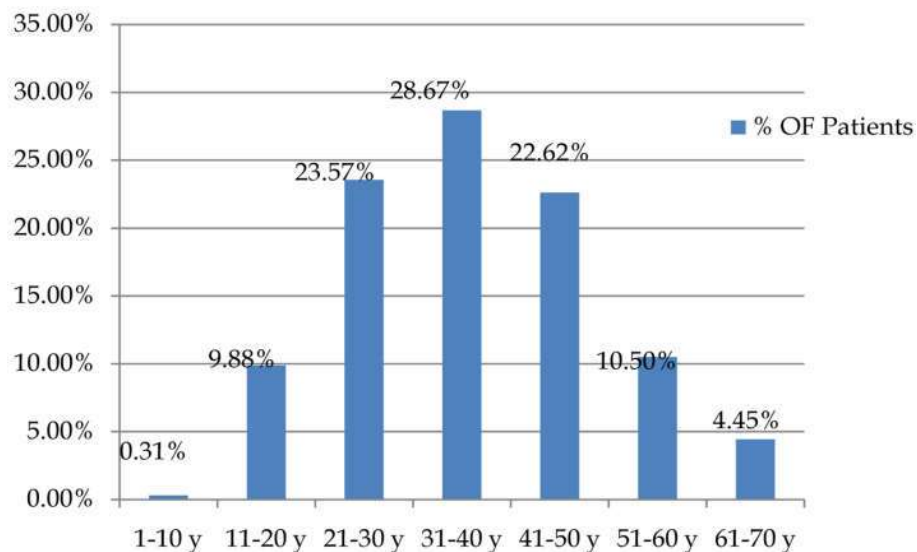
All the cases were analysed for age, sex and clinical presentation.

### Results & Discussion

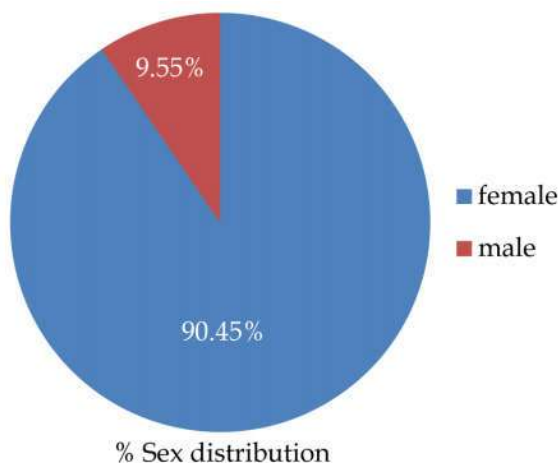
Thyroiditis is second most common benign lesion next to goiter diagnosed on FNAC [5-6] and same was observed in this study.

In present study, the age group of lymphocytic thyroiditis ranged from 8-70 yrs. Majority of cases (74.86%) occurred in the age group of 21-50 yrs with peak in 4th decade (Graph 1). Studies by Bhatia et al, Singh et al, Kumar et al and Friedman et al have observed wide age range from 1<sup>st</sup>-8<sup>th</sup> decade which was comparable with present study [4, 6-8].

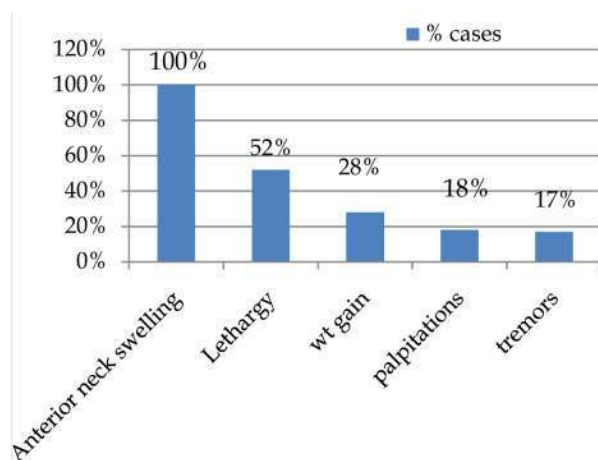
In our study, prevalence of juvenile lymphocytic thyroiditis (0-18 yrs) was 6.07% (Graph 1). It is low as compared to 12.94% and 26.8% as reported by Uma P et al and Marwaha et al respectively. In children it peaks in early to mid-puberty.



**Graph 1:** Age distribution in CLT cases (n=313)



**Graph 2:** Gender distribution (n=313)



**Graph 3:** Clinical presentation in CLT cases (n=313)

Early diagnosis in these cases prevents effect of hypothyroidism on growth and metabolic function. Female preponderance of 90.45% (Graph 2) has been observed similar to other studies [7-8].

The commonest clinical presentation was anterior neck swelling. Hypothyroid symptoms like lethargy and weight gain were observed in 52% and 28% of patients respectively (Graph 3). Uma et al have reported it in 31.7% of cases whereas Bhatia et al have reported in 73.68% of patients [9]. This variability could be attributed to variable stages of disease the patient passes through.

Symptoms of hyperthyroidism like palpitation and tremors were observed in 18% and 17% of patients respectively (Graph 3). This might represent active phase of disease which is usually transient.

#### Architectural Parameters

Lymphoid: epithelial (L: E) ratio is characteristically high in CLT. High L: E ratio was observed in 87.22% of our grade II and grade III cases. This is in accordance with those of Jayaram et al, Friedman et al and Kini et al [8,10-12].

Amongst all the architectural parameters noted, clusturs and sheets of thyroid follicular cells were seen in 100% and 60.06% of cases respectively. In 38.65% of cases follicular pattern was seen, but lack of repetitive microfollicular pattern and evidence of follicular destruction by lymphocytes excluded possibility of neoplastic lesions. Papillae were noted in 5.1% of cases (Table 1), however these cases lacked classic nuclear features which ruled out possibility of papillary carcinoma of thyroid.

**Table 1:** Distribution of cytological parameters in cases (n=313)

Parameters	No. of cases	% of cases
<b>Architectural</b>		
Sheets	188	60.06%
Clusturs	313	100%
Follicular	121	38.65%
Papillary	16	5.11%
<b>Cellular</b>		
Lacy cytoplasm	31	9.9%
Fire flares	2	0.63%
Anisonucleosis	142	45.36%
Hurthle cells	164	52.39%
<b>Background</b>		
Lymphocytes	313	100%
Macrophages	12	3.83%
Epithelioid cells	16	5.11%
Giant cells	10	3.19%
Colloid	88	28.11%

### Cellular Parameters

The classical cytomorphological picture of thyroiditis included infiltration of follicular cells by lymphoid cells and marked anisonucleosis (Table 1). Mild to moderate anisonucleosis of follicular cells was seen in 45.36% of our cases which is comparable to 44% as noted by Jayaram et al. [10]. Infiltration of follicular cells by lymphoid cells was observed in majority of cases and formed the basis for grading of thyroiditis. In early stages of CLT, follicular degeneration and lymphoid infiltration are insignificant.

Hurthle cells were noted in 52.39% (Table 1) of our cases, which was comparable to 56% as noted by Jayaram G. [10]. However, various authors have described Hurthle cell percentage in a wide range, (48-98%) of CLT cases. [10,11,13,14]. Neither its presence nor its number is considered as pathognomonic of CLT [15]. Presence of large number of Hurthle cells with little or no lymphoid cells often makes it difficult to distinguish between thyroiditis and Hurthle cell neoplasm. In such cases, correlation between clinical, functional, immunological and cytological profiles helps in making correct diagnosis.

Changes like lacy cytoplasm and fire flares were noted in 9.9% and 0.63% of cases (Table 1) respectively which indicate hyperplastic epithelium and hyperfunctioning gland. Similar evidence of follicular hyperplasia was noted in 4% cases of lymphocytic thyroiditis by Neha Singh [7]. It

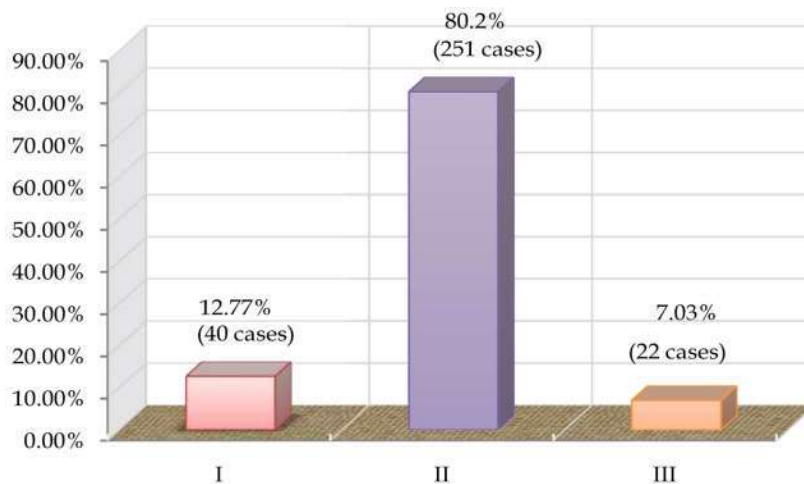
has been noted that despite the fact that CLT is known to cause atrophy of thyroid follicles, there are rare cases of CLT manifesting with follicular hyperplasia [6]. In cases with Hashitoxicosis, cytological features and TFT's may be identical to GD. USG with Doppler and thyroid scan may help in such a situation.

### Background Parameters

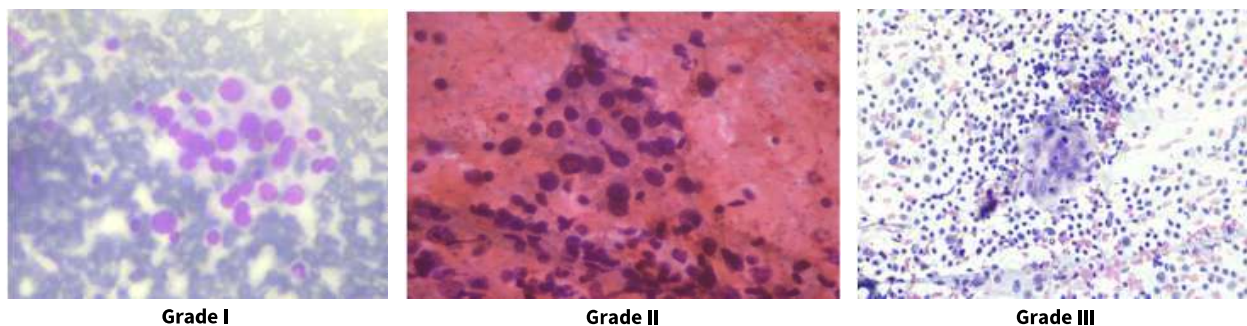
The inflammatory component in autoimmune thyroiditis is lymphoid in nature with a mixture of mature and reactive lymphoid cells [16]. In the present study, these lymphoid cells were observed in all the cases. Other background parameters like macrophages, epithelioid cells and giant cells (Table 1) were noted in few cases (3-5%) which is comparable with findings of Chandanwale SS [17]. Presence of epithelioid cell granulomas and giant cells may bring in differential diagnosis of subacute thyroiditis. In subacute thyroiditis, clinical features are significant and ECGs dominate the scene as compared to lymphoid cell infiltration of follicular cells, presence of Hurthle cell seen in CLT [15].

### Distribution of cases as per cytological grading: (Graph 4 figure 1)

Very few workers have tried to grade lymphocytic thyroiditis on the basis of lymphocytic infiltration within the thyroid follicular cells and in the background as



**Graph 4:** Distribution of cases as per Cytological grading (n=313)



**Fig. 1:** Grades of CLT

proposed by Bhatia et al. In the present study, all the cytological smears were graded as per Bhatia's criteria [4]. In our study majority of cases (80.2%) belonged to grade II of lymphocytic thyroiditis followed by grade I (12.77%) and grade III cases (7.03). This was in accordance to Bhatia et al, Neha Singh et al, Shirish S Chandanwale et al who also noted majority of their patients belonging to grade II followed by grade I and grade III [4,7,11].

#### **Cytological parameters as per the grading: (Table 2)**

Clusturs and sheets of follicular cells were seen predominantly in all the three grades followed by follicular pattern. Papillary arrangement was noted only in grade II

cases. Percentages of anisonucleosis and hurthle cells raised along with the grade of thyroiditis from I to III. Mature and transformed lymphoid cells were seen in all the three grades. Singh et al has stated that presence of these lymphoid cells help in diagnosing grade I thyroiditis [7]. Presence of lymphoid cells in the background of small clusturs of follicular cells was observed by us in our 40 cases of grade I thyroiditis. Singh et al noticed macrophages in 18.7% of cases in grade III thyroiditis which was not seen in our study. Presence of epithelioid cells and giant cells was observed only in grade II and III cases.

**Table 2:** Distribution of cytological parameters as per grading (n=313)

Sr. No.	Parameters	Grades		
		(40 cases) I	(251 cases) II	(22 cases) III
1	<b>Architectural</b>			
	Sheets	31 (77.5%)	140 (55.55%)	17 (77.2%)
	Clusters	40 (100%)	251 (100%)	22 (100%)
	Follicular	24 (60%)	88 (34.9%)	9 (40.9%)
	Papillary	0 (0%)	16 (6.34%)	0 (0%)
2	<b>Cellular</b>			
	Lacy cytoplasm	5 (12.5%)	23 (9.12%)	3 (13.6%)
	Fire flares	0 (0%)	2 (1.19%)	0 (0%)
	Anisonucleosis	7 (17.5%)	120 (47.61%)	15 (68.1%)
	Hurthle cells	18 (45%)	131 (51.9%)	15 (68.1%)
3	<b>Background</b>			
	Lymphocytes	40 (100%)	251 (100%)	22 (100%)
	Macrophages	3 (7.5%)	9 (3.57%)	0 (0%)
	Epithelioid cells	0 (0%)	14 (5.55%)	2 (9.09%)
	Giant cells	0 (0%)	9 (3.57%)	1 (4.54%)
	Colloid	13 (32.5%)	60 (23.8%)	15 (68.1%)

#### **Abbreviations**

CLT- Chronic lymphocytic thyroiditis  
 GD- Grave's disease  
 FNAC- Fine needle aspiration cytology  
 USG- Ultrasonography  
 TFT- Thyroid function tests  
 MGG- May Grunwald Giemsa

#### **Conclusion**

Clinical presentation of lymphocytic thyroiditis varies depending on the stage of disease. But,

- Careful search of lymphocytes infiltrating the follicular cells with background lymphocytes can correctly diagnose grade I CLT cases.
- Whereas, High L: E ratio and Anisonucleosis of follicular cells make diagnosis of grade II and grade III cases.

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