

# Cytomorphologic Study of Lymphocytic Thyroiditis: A Correlation between Cytological Grade and Biochemical Parameters

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## ABSTRACT

**Introduction:** Lymphocytic thyroiditis is an autoimmune disorder characterised by lymphocytic infiltration of the thyroid gland leading to follicular destruction in addition to immunological alterations attributed to the antibodies circulating in the serum against thyroid peroxidase, thyroglobulin, and thyroid stimulating hormone receptor antigens.

**Aim:** To study the cytomorphologic spectrum of lymphocytic thyroiditis, and correlate the cytological grades with the levels of TSH, FT3, FT4 and Anti-TPO antibodies.

**Materials and Methods:** This study was carried out over a period of 24 months in Pathology department of SGRPM & HS, Dehradun, India. Out of 58 cases diagnosed as lymphocytic thyroiditis on cytology and graded using Bhatia A et al., grading system, the levels of TSH, FT3, FT4 and Thyroid Peroxidase Antibody were known in 31 cases. The cytological grades of

lymphocytic thyroiditis were correlated with these parameters and statistical analysis was done using one way ANOVA.

**Results:** Out of 31 cases, majority of patients (30 cases, 96.7%) were females presenting in third decade of life. Cytologically, in 21 cases (67.7%) the patients had grade 2 thyroiditis, followed by grade 3 thyroiditis in 7 cases (22.6%). Anti-TPO was elevated in 26 cases (83.8%) and elevated level of TSH was seen in 17 cases (54.8%). On correlating the cytological grades with these parameters, p-value was found to be 1.00 which is statistically insignificant.

**Conclusion:** While Lymphocytic infiltration of thyroid follicles is pathognomonic and positivity for antithyroid antibodies is strongly associated with lymphocytic thyroiditis, no correlation was observed between the grades of thyroiditis and the levels of Anti-TPO, FT3, FT4 and TSH.

**Keywords:** Antithyroid antibody, Cytology and lymphocytic thyroiditis, Hormone receptor antigens

## INTRODUCTION

Chronic lymphocytic thyroiditis is a common autoimmune disease exhibiting marked lymphoid infiltrate destroying the thyroid follicles, which are eventually replaced by fibrosis. The disease is characterised clinically by an active phase which is transient exhibiting clinical manifestations of hyperthyroidism followed by evolution and destructive phase that manifest with subclinical or overt hypothyroidism [1].

Though worldwide the commonest cause of hypothyroidism is iodine deficiency, Hashimoto's (lymphocytic) thyroiditis remains the commonest cause of spontaneous hypothyroidism in areas of adequate iodine intake. The annual incidence of lymphocytic thyroiditis worldwide is estimated to be 0.3-1.5 cases per 1000 persons exhibiting a female predilection, with peak incidence occurring in 30-50 years of age [2,3,4].

Fine needle aspiration cytology (FNAC) is a highly sensitive tool in diagnosing Hashimoto's (lymphocytic) thyroiditis, with a diagnostic accuracy rate of 92% [5]. The diagnosis of the disease on fine needle aspiration cytology (FNAC) smears is made by finding the oxyphilic transformation of follicular epithelial cells (Hurthle cells), infiltration of follicles by lymphocytes and plasma cells, presence of moderate number of lymphoid cells in background with scanty or absent colloid in the background [6].

The present study was carried with an aim to study the clinical presentation, and cytomorphologic spectrum of lymphocytic thyroiditis and correlate the cytological grades with the levels of TSH, FT3, FT4 and Anti-TPO antibodies. The concept was designed to enhance understanding of pathogenesis of the disease.

## MATERIALS AND METHODS

This study was carried out in the Department of Pathology at SGRPM & HS, Dehradun, Uttarakhand, India. Approval of the study

was taken from the institutional ethical committee (Registration No. ECR/710/Inst/UK/2015) before commencing the study (Reference No.SGRM/EC/52/16).

This was a prospective time bound analytical observational study and all the patients who presented to the hospital and fitted in the inclusion criteria were included. All patients aged between 12 to 80 years presenting to ENT/surgery OPD with painful or painless neck swelling and/or clinical features of constipation, lethargy or cold intolerance suggesting hypothyroidism or poor attention span, hyperactivity, restlessness, heat intolerance, loose stools suggesting hyperthyroidism were referred to pathology department for cytological diagnosis. Thus, all the cases of lymphocytic thyroiditis diagnosed on FNAC from June 2016 to May 2018 for which biochemical parameters were available were included in the study. Patients having history of thyroid related drug intake or any thyroid related surgery were excluded from the study. The relevant clinical details of the patient were included and recorded on predesigned proformas.

Fine-needle aspiration cytology (FNAC) of thyroid was done by using 23G needle attached to 10 mL syringe by the non aspiration technique [6]. Both air dried and wet fixed smears were prepared. The slides were stained with Giemsa (MGG) stain and Papanicolaou stain respectively. Fifty eight cases were cytologically diagnosed as lymphocytic (Hashimoto's) thyroiditis on cytology. The smears were seen by two cytopathologists and grading was done independently based on the presence of impingement or infiltration by lymphocytes and plasma cell into the thyroid follicles, Hurthle cell change, multinucleated giant cell, epithelioid cell clusters and/or formation of lymphoid follicles. Grading of thyroiditis was done on the smears based on a set of predefined criteria as described by Bhatia A et al., into Mild (Grade-1) with few lymphocytes infiltrating the follicles, Moderate (Grade-2) with moderate lymphocytic infiltration along with Hurthle cell change and Severe (Grade-3) with florid

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