

## CLINICAL AND MICROBIOLOGICAL FEATURES OF CHRONIC TONSILLITIS AND ITS IMPACT ON UPPER RESPIRATORY HEALTH

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**Abstract:** *Chronic tonsillitis is one of the most common otorhinolaryngological diseases characterized by persistent inflammation of the palatine tonsils and recurrent infectious episodes. The disease significantly affects upper respiratory tract health and may lead to systemic inflammatory complications. The aim of this study was to evaluate the clinical and microbiological characteristics of chronic tonsillitis and determine the significance of inflammatory markers in disease severity. The study included 48 patients diagnosed with chronic tonsillitis who underwent clinical, microbiological, and laboratory evaluation. Elevated inflammatory markers, recurrent bacterial colonization, and structural tonsillar changes were significantly associated with frequent exacerbations and impaired respiratory function. Statistical analysis demonstrated a strong positive correlation between bacterial colonization and recurrence frequency ( $r = 0.73$ ;  $p < 0.001$ ). The findings confirm the important role of chronic infection and inflammatory activity in chronic tonsillitis progression.*

**Keywords:** *chronic tonsillitis, ENT diseases, upper respiratory tract, inflammation, microbiology, tonsillar infection*

### INTRODUCTION

Chronic tonsillitis remains one of the leading diseases in otorhinolaryngology and represents a significant clinical problem among children and adults worldwide. The disease is characterized by chronic inflammation of the palatine tonsils accompanied by recurrent sore throat episodes, dysphagia, halitosis, and cervical lymphadenopathy [1].

The palatine tonsils are important components of the immune system and participate in local defense mechanisms against respiratory pathogens. However, persistent bacterial colonization and repeated infections may lead to chronic inflammatory changes, fibrosis, and impaired immunological function. Chronic tonsillitis is frequently associated with bacterial pathogens such as *Streptococcus pyogenes*, *Staphylococcus aureus*, and anaerobic microorganisms [2].

Long-term inflammatory activity contributes to local tissue destruction and may increase the risk of systemic complications including rheumatic fever, glomerulonephritis,

and chronic respiratory dysfunction. Recent studies additionally indicate that chronic tonsillar inflammation may influence systemic immune regulation and oxidative stress pathways.

Early identification of microbiological and inflammatory changes is therefore important for improving treatment strategies and preventing chronic complications in patients with ENT diseases.

#### Materials and Methods

This study was conducted at an otorhinolaryngology clinical center and included 48 patients diagnosed with chronic tonsillitis. The mean age of participants was  $27.6 \pm 8.2$  years. Men accounted for 26 cases (54.2%), while women represented 22 cases (45.8%).

Clinical examination included assessment of tonsillar hypertrophy, hyperemia, crypt enlargement, recurrent infection frequency, and cervical lymph node status. Laboratory investigations included complete blood count, C-reactive protein (CRP), erythrocyte sedimentation rate (ESR), and throat swab microbiological analysis.

Bacterial cultures were performed to identify pathogenic microorganisms and determine dominant microbial flora. Patients with acute systemic infections and recent antibiotic therapy were excluded from the study.

Statistical analysis was conducted using variation statistics and Pearson correlation analysis. Quantitative variables were expressed as mean  $\pm$  standard deviation ( $M \pm SD$ ). Statistical significance was accepted at  $p < 0.05$ .

#### Results

The study demonstrated significant inflammatory and microbiological alterations in patients with chronic tonsillitis. Recurrent sore throat episodes more than four times annually were identified in 68.7% of participants. Tonsillar hypertrophy and crypt enlargement were present in 72.9% of cases.

Elevated CRP levels were detected in 56.2% of patients with a mean value of  $9.1 \pm 2.8$  mg/L. Increased ESR was observed in 47.9% of participants. Leukocytosis was identified in 41.6% of cases during exacerbation periods.

Microbiological analysis revealed *Streptococcus pyogenes* colonization in 52.1% of patients and *Staphylococcus aureus* in 37.5%. Mixed bacterial flora was observed in approximately 29.2% of cases.

Correlation analysis demonstrated a strong positive relationship between bacterial colonization intensity and recurrence frequency ( $r = 0.73$ ;  $p < 0.001$ ). Elevated inflammatory markers were significantly associated with severe tonsillar hypertrophy and cervical lymphadenopathy.

Patients with recurrent infections demonstrated significantly higher CRP levels and more pronounced structural tonsillar changes compared to individuals with less frequent exacerbations. Halitosis was reported in 58.3% of patients and correlated with crypt enlargement and bacterial accumulation.

Men showed slightly higher bacterial colonization rates, whereas women demonstrated increased inflammatory sensitivity and recurrent throat discomfort. Smoking was identified as a major aggravating factor in 31.2% of patients.

#### Discussion

The findings of this study confirm the important role of chronic bacterial colonization in the pathogenesis of chronic tonsillitis. Persistent infection within tonsillar crypts contributes to continuous inflammatory activation and structural tissue damage.

The predominance of *Streptococcus pyogenes* corresponds with previous international ENT studies demonstrating its major etiological role in recurrent tonsillar infections [3]. Mixed bacterial colonization additionally increases inflammatory severity and treatment resistance.

Elevated CRP and ESR levels indicate chronic inflammatory activation and systemic immune response. Persistent inflammation may impair local immune defense and increase susceptibility to recurrent respiratory infections.

Structural tonsillar changes including hypertrophy and crypt enlargement create favorable conditions for bacterial persistence and biofilm formation. Smoking further aggravates mucosal inflammation and reduces local immune protection.

These findings highlight the importance of microbiological monitoring, anti-inflammatory therapy, and early intervention in preventing progression and systemic complications of chronic tonsillitis.

#### CONCLUSION

Chronic tonsillitis is associated with significant inflammatory and microbiological disturbances that contribute to recurrent upper respiratory infections and impaired tonsillar function. Elevated inflammatory markers, bacterial colonization, and structural tonsillar abnormalities were identified as major indicators of disease severity.

The findings demonstrate that early diagnosis, microbiological assessment, and appropriate therapeutic strategies are essential for preventing chronic complications and improving upper respiratory tract health in patients with chronic tonsillitis.

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