

Investigation of *H Pylori* Colonization in Adenotonsillectomy Specimens by Means of Rapid Urease (CLO) Test

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Abstract

This prospective clinical study was performed to investigate the colonization of *H pylori* in adenoid and tonsil tissues by using the Campylobacter-like organism (CLO) test. Included in the study were 56 patients aged 3 to 43 yrs who had undergone adenoidectomy, tonsillectomy or adenotonsillectomy procedures under general anesthesia. Two-mm diameter tissue pieces of adenoid and tonsil specimens were placed in urease solution. Color changes were noted after 30 min and 24 hrs. 27 (48.2%) of the patients were shown to be *H pylori* positive and 29 (51.8%) were negative, regardless of the type of specimen. There was a high rate of *H pylori* colonization in tonsil and adenoid tissues. The cause of recurrent *H pylori* infections of the gastric mucosa may be the result of colonization in the adenotonsillar tissues. Prevention of *H pylori* colonization may reduce the recurrences of the disease.

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Keywords • *H pylori* • adenoidectomy • tonsillectomy • CLO test

Introduction

H *pylori* is a microorganism that can cause an acute gastritis which in turn can develop into a chronic form of infection within 2 to 3 weeks.^{1,2} The chronic infection may last for years which may change gastric mucosa causing gastric ulcers, duodenal ulcers, or even gastric cancer.^{3,4} Even though, it is regarded as one of the most common infections in the world, its method of transmission has not yet been fully understood.⁵ Colonization of *H pylori* has been found in dental plaques, saliva, tonsils and adenoids.^{1,6} Some researchers emphasize that the oral cavity is a reservoir for systemic infections that may occur after eradication therapy.⁷ A high rate of *H pylori* colonization are reported in tonsil and adenoid tissues.¹ In this study we investigated the frequency of *H pylori* colonization in tonsil and adenoid tissues by using the *Campylobacter*-like organism test (CLO or rapid urease test) on tonsillectomy and adenoidectomy specimens.

Patients and Methods

This is a prospective study done on 56 patients undergoing adenoidectomy, tonsillectomy, or both, from March to August 2003, in Khalili Hospital, affiliated to Shiraz University of Medical Sciences, Shiraz, Iran. These patients had routine operation indications such as chronic or recurrent tonsillitis. All

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patients, except four, had used penicillin derivatives during one month before operation. The presence of dyspeptic complaints was not a selection criterion. Exclusion criteria included patients who had been using bismuth compounds, antacid drugs or H₂ receptor blockers during the six months before the operation. Patients who had used antibiotics were included in the study.

At the end of each operation, two pieces of tissues with 2 mm diameter was cut from each specimen with a sterile blade. To prevent contamination while obtaining the specimens, each specimen was cut with a separate blade and the gloves were also changed. The specimen were washed with sterile normal saline and placed in the CLO test tubes and kept at room temperature. The tests were read and recorded after 30 minutes and then after 24 hrs. At the end of 24 hrs, a yellow CLO test was recorded as negative and an orange or red color was recorded as positive.

Results

From 56 patients that participated in the study 34 patients (61%) were male and 22 patients (39%) were female with the age range of 3 to 43 yrs. The CLO test results were positive in 27 patients (48%) and negative in 29 patients (52%). From 15 patients who had only adenoidectomy, seven specimens were positive and eight negative. Ten patients underwent simple tonsillectomy, of whom only four had a positive test result (three positive in both tonsils and one positive in only one tonsil). From 31 patients who underwent adenotonsillectomy three specimens, two tonsils and one adenoid, were obtained from each patient. Of these 31 patients, CLO test was positive in 16 patients and negative in 15 patients (Table 1). Of these 16 patients with positive CLO test results, In four patients all three specimens were positive, in five patients two specimens were positive and in the remaining seven, only one of the specimens was positive.

Table 1: Result of the CLO test

Type of operation(specimen)	number	<i>H pylori</i> +ve	<i>H pylori</i> -ve
Adenoidectomy	15	7	8
Tonsillectomy	10	4	6
Tonsillectomy & Adenoidectomy	31	16	15
Total	56	27	29

Discussion

CLO test is a specific and sensitive test for finding *H pylori*.¹ The specificity of the CLO

test was found to be 97% with a sensitivity of 98%.^{8,9}

As a general rule, patients undergoing the CLO test should not have recently used antibiotics and bismuth compounds, because they reduce the sensitivity of the CLO test. To prevent false negative test results, multiple pieces should be taken from the specimen for CLO testing.⁸ As most of our patients had referred to different medical centers for treatment of chronic or recurrent *H pylori* infections and were treated with antibiotics, we had to ignore the use of antibiotics.

Colonization by *H pylori* has been found in dental plaque and saliva.⁶ In a study performed on 43 dyspeptic patients, *H pylori* was found on the dental plaque, gastric antrum, and body specimens of 98% of their patients and it was stated that dental plaques were a major reservoir.¹⁰ *H pylori* was not detected in the oral cavity of 52 patients whereas it was positive in their gastric biopsy specimens, as a result it has been stated that the oral cavity may not be an important or a permanent reservoir for *H pylori*.^{11,5} Whereas, in a similar study performed on 208 patients, *H pylori* was found in gastric mucosa of 116 patients, while only 15 of them had positive dental plaques.⁵

The colonization of *H Pylori* in the paranasal sinuses and their possible role in development of chronic rhinosinusitis has been recently reported by Ali et al,¹² and Setsuko et al.¹³ The rate of *H pylori* colonization in adenotonsillectomy specimens was 57.9% in a study done by Unver et al,¹ and in our specimens this rate was 48.2%.

The rate of the presence of *H pylori* (48.2%) found in our study is indicating that tonsil and adenoid tissues seems to be a major reservoir for infection, and this might be the cause of recurrent *H pylori* infection of the gastric mucosa. Prevention of this colonization may reduce the recurrences of the gastritis.

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