

# Diagnostic Value of *Helicobacter Pylori* Serologic Test in Pediatric Population with Abdominal Pain

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**Abstract-** the aim of this study was to determine the diagnostic value of a serologic test for *Helicobacter pylori* (*H. pylori*) in pediatric population presenting with abdominal pain suspected of peptic disease. We conducted a prospective cross sectional study. There were 202 children with abdominal pain. Serologic BM test using Helisual Quick test kit was performed. All patients then underwent endoscopic examination. The calculated sensitivity, specificity, positive and negative predictive values of the applied serologic BM test were 72.4%, 64.8%, 44.6% and 85.7%, respectively. We concluded that a positive result from serologic test could not be judged independently. Thus, in symptomatic patients, other diagnostic methods (e.g. endoscopy and UBT) should be applied prior to the therapeutic decisions.

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**Keywords:** Serology; pathology; *Helicobacter pylori*; abdominal pain

## Introduction

Bizzozero, an Italian scientist, found a bacterium for the first time in humans and dogs stomach and called it "Spirilli" in 1893 (1). After several decades, Warren and Marshal indicated the relationship between the so-called *Campylobacter Pyloris* and peptic ulcer (2).

Infection with *H. pylori* is the most common gastro-intestinal bacterial infection all around the world (3). Its prevalence varies depending on the hygiene level; more than 80% of populations are infected up to the age of 20 in developing countries (4). No sex preference was reported.

There are several invasive and noninvasive methods of diagnosis including urease test, endoscopic sampling and culture, urease breathe test, serologic test, and different antigen and antibody survey tests in fecal, urine, serum and saliva samples (5).

Serologic tests are the most routine noninvasive diagnostic tests that are feasible without the needs of patient preparation or antacids cessation. It is noteworthy that the diagnostic range of anti-*H. Pylori* antibody is different in pediatric population in comparison to the elderly. The present study aimed to determine the diagnostic value of a serologic test for *H.*

*pylori* in pediatric population who presented with abdominal pain suspected of being due to peptic disease.

## Patients and Methods

We conducted a prospective cross sectional study and included all children with abdominal pain suspected of being due to the peptic disease referring to Rasht 17-Shahrivar Hospital over a 3-year period from 2004 to 2007. There were 202 children with abdominal pain, primarily. Among them, only 147 patients were candidates to have peptic disease after initial examinations.

Written informed consent was obtained from their parents. Patient demographics and history were registered. Serologic BM test was performed using Helisual Quick test kit.

All patients underwent endoscopic examination and two samples were taken from the antrum of their stomach. The samples were transferred in 10% formalin solution to the pathologic center, studied, and reviewed by a single pathologist.

Analysis was performed using SPSS 11.0. Relationships were assessed with  $\chi^2$  test. Sensitivity, specificity, positive and negative predictive values of the diagnostic serologic test was calculated.

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## Results

147 children were included primarily in our study. However, only 103 of them participated in the follow up visits and completed our point of view lab data. Among them, 57 were girls and 46 were boys (55.3% and 44.7%, respectively). The patients' mean age was 8.46 ( $\pm 3.09$  as SD) and ranged between 1.5 and 15 years. Eighty-nine were urban (86.4%) and other 14 were rural (13.6%). The familial history of peptic disease was positive only in 25 patients (24.3%). Serologic BM test was positive in 47 children (45.6%) whereas the test of 39 and 17 patients demonstrated negative or borderline results. However, pathology reported infection with *H.pylori* only in 29 cases (28.2%). Moreover, the severity of infection was reported high, moderate and low in 1, 18 and 10 patients, respectively.

The calculated sensitivity, specificity, positive and negative predictive values of the applied serologic BM test were 72.4%, 64.8%, 44.6% and 85.7%, respectively.

We did not observe any statistically significant relationship between the results of pathology and other studied variables including patients' sex, age, familial history, and region of living. However, we could prove a weak agreement relationship between the pathologic and serologic results ( $P=0.002$ , kappa=3.4). Table 1 shows the details.

**Table 1.** Positive pathologic result according to other variables

Positive Result in Pathology; n (%)	
Sex	
Female	16 (28.1)
Male	13 (28.3)
Age Group	
< 3 years	1 (33.3)
3-6 years	1 (7.1)
6-9 years	10 (27.8)
9-12 years	13 (37.1)
12-15 years	4 (26.7)
Familial History	
Positive	5 (20)
Negative	24 (30.8)
Region of Living	
Urban Area	25 (28.1)
Rural Area	4 (28.6)
Result of Serology	
Positive	21 (44.7)
Borderline & negative	8 (14.3)

In addition and with attention to ROC curve, we could reach a serologic test cut-off point specific for children. Statistical evaluations estimated it to be 28.2 in comparison with 20 for the elderly.

## Discussion

*H. pylori* is one of the most common chronic bacterial infections all around the world which may be acquired in childhood and leads to some problems in digestive system. It is the major cause of duodenal ulcer and its relation with gastric cancer is clear nowadays. The majority of patients with *H. pylori* remain asymptomatic in a long period.

We calculated the sensitivity and specificity of serologic test to be 72.4% and 64.8%, respectively. Khatami et al. conducted a similar study on 35 children. They reported 54.5% and 68%, respectively as the test sensitivity and specificity (6).

In our study, there was no statistically significant relation between the results of serologic test or pathology and other studied variables.

It seems that serologic test, according to its 85.7% negative predictive value, is suitable in order to rule out *H. pylori* infection. We concluded that a positive result from the serologic test could not be judged independently. Thus, in symptomatic patients, other diagnostic methods (e.g. endoscopy and UBT) should be applied prior to the therapeutic decisions.

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