ORIGINAL ARTICLE

Diagnosis and Comparison of Helicobacter pylori Infection by Histology and Serologically in Chandka Medical College Hospital at Larkana, Sindh, Pakistan

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ABSTRACT

Aim: To determine the H. pylori infection in patients by two diagnostic methods serology and biopsy for histology using upper gastrointestinal endoscopy.
Study design: Descriptive case series
Place and duration of study: Department of Gastroenterology Chandka Medical College Hospital Larkana from 1st October 2019 to 31st March 2020.
Methodology: One hundred and fifty two patients having acid peptic disorder were enrolled and the history of patient was taken. Five ml sample of blood was taken for serology testing whereas three biopsies samples were taken from antrum of stomach and for histology.
Results: The frequency of H pylori infection was found by histologically (73%) and serologically was (85.5%) that was significantly higher than histology. The histopathology results indicate as accurate procedures in diagnosis of H. pylori compared to ICT detection as antibodies persist in body for long period after treatment.
Conclusion: In the era, where upper GI endoscopy is widely available at an affordable cost consider before eradication .serology test alone is not sufficient for treatment of infection.
Key words: *H, pylori*, Histology, Serology

INTRODUCTION

The revolutionary discovery of *Helicobacter pylori* previously known as *Campylobacter pylori* colonize in the lining of gastric mucosa, by Warren and Marshall in 1993, opens the new demanding epoch for the diagnosis and treatment of acid peptic disorders. It causes gastritis, ulcers on the surface of stomach and duodenum, but some time became more aggressive and is associated with gastric adenocarcinoma and mucosa-associated lymphoid tissue (MALT) lymphoma.[1-3] This chronic infection was thought to be one of the most frequent causes produced by *H. pylori* microorganisms and affects half of the globe population.[4,5]

Pakistan is a country having the enormous load of *H. pylori* likewise the rest of world, most affected groups are of old age and low income.[6,7] The *H. pylori* diagnostic approach was remained a challenge to the microbiologist and clinicians. Now days there are multiple ways present for the diagnosis, although the better option should has less invasive technique with high sensitivity and high specificity. The invasive method is upper gastrointestinal endoscopy whereas non-invasive technique is serology accompanied with other procedures.[8,9]

Options for the selection of test is depend upon various aspects like expenditure, easy accessibility, clinical state, sensitivity, specificity, reliability, advantages and disadvantages. The invasive test like taking Biopsies through upper GI endoscopy is considered as the gold standard[10,11] and it needs fine skills otherwise there may be sampling inaccuracy which leads to compromise test sensitivity. Non-invasive serology test is better choice because it has great screening value accompanied with the advantages as simple, cost effective and very easy to perform.[12-14].

The histology test is used to reveal the active and chronic infection with gastric cell morphology and detection of *H. pylori.*[15] Antibody detection techniques like ICT (immune chromatography technique) is non- invasive, rapid, easy and inexpensive diagnostic test that shows antibodies in human against *H. pylori* but it is not capable to differentiate in the active or past infection likewise invasive histology method, even with eradication therapy antibodies remain for years for years after eradication.[16]

It is critical to select a test for accurate, proper and reliable diagnoses for eradication therapy, therefore in present study we have selected one invasive histopathology and one non-invasive serology (ICT) antibody test as a good combination with harmony of both tests and compared them with each other in the same subject, and as the best of our knowledge that there is no any above kind of study conducted in this remote area of Sindh, which is serving the patients from northern Sindh and Baluchistan.

MATERIALS AND METHODS

This research was carried out at the Department of Gastroenterology and Department of Pathology, Chandka Medical College Hospital Larkana from 1st October 2019 to 31st March 2020 and 152 symptomatic patients were registered. All patients with clinical characteristics, such as

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upper abdominal pain, cardiac burning, bloating, nausea, vomiting, sensing completeness after consuming food, lack of appetite, weight loss, age 16 to 60 years genders. Patients with a history of anti-inflammatory non-steroid drugs (NSAIDs)/steroids/any medications that have induced gastraitis or peptic ulcers have not been considered; proton pump inhibitors, H2 receptor antagonists or antibiotic therapy have been used for patients since last 4 weeks and bleeding disorders. Both patients with upper gastrointestinal symptoms and they met the inclusion criteria before taking an informed, written consent study. Gastric biopsy specimen smear from the symptomatic community and venous blood was also obtained for serological studies. Clinical and endoscopic data were obtained.

The endoscopy was conducted with a video endoscopy (Olympus EVIS 170) (Olympus Optical, Japan). Patients were told, beginning with the 4 percent lignocaine spray treatment to anaesthetize the oropharynx, to come with six to eight hours fasting in the morning of appointment, as a ring protective between the patient's teeth is fastened so that the mouth remains open and patients cannot bit the scope. After accurate positioning of the patient, an endoscopic tube is inserted in the mouth to visualise oesophagus, stomach and duodenum. The physician will closely inspect the upper gastrointestinal lining of the mucosa for inflammation, ulcer or other anomalies and during the course of this procedure three biopsy samples from the gastric antrum mucosa which was immediately preserved in formaline of 10 percent and sent for histopathology to laboratories. The aseptic venipuncture technique was used as per standard international WHO protocols, about 3-5 ml of blood was collected from each patients, after centrifugation serum was separated from blood sample for the detection of *H. pylori* antibodies, as per guidance after 10-15 minutes results were noted if two distinct color lines in control were observed the result positive and one line declared as the negative result. The data was entered and analyzed through SPSS-20.

RESULTS

The age range was 22 to 46 years with mean age was 34.1±11.9 years. There were 84 (55.3%) males and 68 (44.7%) females. On testing methods infection was more marked by serology test 130 (86%) cases as compared with histopathology test 111 (73%) cases (Table 1). Both tests were found to be positive into 111 cases (Table 2). According to endoscopic finding majority of patients suffered from antral gastritis was 79 (52%) cases, pan-gastritis was 34 (22%), chronic gastritis was 25 (7%) cases and gastric ulcer was found in 4 (2 %) cases.

Table 1: Comparisons of results obtained by serology (ICT) and histology

Test	Positive	Negative
Serology (ICT)	130	22
Histology	111	41

Table 2: Comparisons of serology (ICT) positive cases with histology among 130 (positive) cases

No. of cases	Testing methods	
	Serology (ICT)	Histology
111	Positive	Positive
19	Negative	Negative

DISCUSSION

The association of *H. pylori* and gastroduodenal disease are well established since the discovery of *H. pylori.*[1-8] The reports are pouring from various part of world as well as from our country regarding isolation of organism. A variety of methods are available included invasive and non-invasive tests for the evaluation of *H. pylori* infection.[9-24] We have performed non-invasive serology and non-invasive histology test. But it is clearly evident from various studies that serology test is not capable or reliable to differentiate in between active infection or past exposure therefore the decision of start of eradication therapy is quite complicated, as the antibody concentrations remain positive for long time even after successful treatment.[22-29]

Therefore keeping this in mind we have selected invasive histopathology test as to address above issue and also compared them with each other. Table1, shows comparative results of serology (ICT) with histopathology cases among 152 subjects' the 130 cases were positive and 22 were found negative through serological reports and the 111 cases were positive and 41 cases were found negative by histologically with the support of similar pattern study reported by Khayyat et al.[30] Table 2 showed the comparison results of 130 positive cases. The 130 cases were found positive by serology (ICT) and only 111 cases were positive by histopathology but 19 cases found negative by histopathology and positive by serology and the same results were observed by Vahedi et al.[22] The histopathology results indicate as accurate procedure in diagnosis of *H. pylori* compared to serologically (ICT) detection as antibodies persist in body for long period

CONCLUSION

Non-invasive serology test (ICT) method used in this study is commercially available and inexpensive and easy to perform well suitable in primary care practice but failed to detect acute infection therefore difficult to decide for eradication treatment for *H pylori*. Whereas histology is considered to be accurate test of *H. pylori*, it can differentiate the present and past infection but expensive test needs endoscopy and that is quite supportive to decide for eradication treatment of *H. pylori*.

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