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HpSA Test Diagnose Acid Peptic Disease

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ABSTRACT

Helicobacter pylori are the most prevalent chronic bacterial infection. It is associated with peptic ulcer disease, chronic gastritis, gastric adenocarcinoma and gastric Mucosa Associated Lymphoid Disease (MALT) lymphoma. HpSA Enzyme Immunoassay (EIA) is an *in vitro* qualitative procedure for the detection of *Helicobacter pylori* antigens in human stool. Test results are intended to aid in the diagnosis of *H. pylori* infection and to monitor response during and post therapy in patients.

Keywords: HpSA, Endoscopy, PPI, UBT

INTRODUCTION

Helicobacter pylori are the most prevalent chronic bacterial infection and are associated with peptic ulcer disease, chronic gastritis, gastric adenocarcinoma and gastric Mucosa Associated Lymphoid Tissue (MALT) lymphoma [1,2]. It is a Gram-negative, microaerophilic bacterium usually found in the stomach. The Australian scientists Barry Marshall and Robin Warren found it in the stomach of a person in 1982 with chronic gastritis and gastric ulcers. It was not previously believed to have a microbial cause [3]. It is also linked to the development of duodenal ulcers and stomach cancer [4]. However, over 80% of individuals infected with the bacterium are asymptomatic. In recognition of their discovery, Marshall and Warren were awarded the 2005 Nobel Prize in Physiology or Medicine. Upto 90% of people infected with *H. pylori* never experience symptoms [5]. Acute infection may appear as an acute gastritis with abdominal pain or nausea. This develops into chronic gastritis and non-ulcer dyspepsia: stomach pains, nausea, bloating, belching and sometimes vomiting or black stool [6].

CASE REPORT

A 65 year old female was suffering from acid peptic disease with epigastric pain since last 20 years. She was treated with proton-pump inhibitors such as omeprazole. She was afraid of taking any spicy or non-vegetarian food which increased the symptoms. She was not tolerating citrus fruits and milk products except curd. She was a non-diabetic and moderately hypertensive. Ultrasound scanning of whole abdomen was done. No significant abnormality was detected. Upper GI endoscopy suggested mucosal hyperemia with erosions in the antrum and multiple tiny superficial ulcers with nodularity over anterior and superficial wall in the first part of duodenum. The rapid urease test was found positive. Enzyme immunoassay for the detection of monoclonal antigens of *Helicobacter pylori* in stool found positive in high titer. Two courses of triple drug therapy were given at two weeks interval. The HpSA test became negative.

DISCUSSION

Helicobacter pylori is now recognized as one of the most common and medically important pathogen worldwide [7]. The diagnostic test for *H. pylori* can be categorized as invasive (endoscopy, biopsy, culture) or non-invasive (stool antigen test, carbon urea breath test and blood antibody tests). An endoscopic biopsy is an invasive means to test *H. pylori* infection. Low level of infection can be missed by biopsy. So multiple samples are recommended. The most accurate method for detecting the bacteria is with histological examination from two sites after endoscopy biopsy, combined with either a rapid urease test or microbial culture [8].

Non-invasive tests for *H. pylori* infection may be suitable and include stool antigen tests or the carbon urea breath tests. The stool antigen assay detects bacterial antigen indicating an ongoing *H. pylori* infection. The test can therefore be used to establish the initial diagnosis and to

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confirm eradication [9]. Of the available tests, stool antigen testing is the most cost-effective in areas of low to intermediate prevalence of *H. pylori*.

An endoscopy biopsy is an invasive means to test for *H. pylori* infection. Low-level infections can be missed by biopsy, so multiple samples are recommended. The most accurate method for detecting *H. pylori* infection is histological examination from two sites combined with rapid urease test [10].

Urea breath testing is based upon the hydrolysis of urea by *H. pylori* to produce CO_2 and ammonia. Urea with a labeled carbon isotope is given by mouth. The liberated CO_2 is detected in breath samples. The tests can be performed in 15-20 min and have similar cost and accuracy. This method is not preferred in young children and pregnant women though the dose of radiation is small [11,12].

Stool antigen assay detect *H. pylori* infection. The monoclonal enzyme immunoassay is highly sensitive (94-97%). Stool antigen testing can therefore be used to establish the initial diagnosis of *H. pylori* and to confirm eradication [13,14]. Among all the available tests, stool antigen testing is the most cost-effective in areas of low to intermediate prevalence of *H. pylori*. This test is predictive of eradication as early as seven days after completion of therapy. False negative results can be avoided by stop taking antibiotics for four weeks and PPIs for one to two weeks prior to testing **(Table 1 and Figures 1-7)**.

Table 1. Comparative statement of different diagnostic tests of *H. pylori.*

S. No.	Tests	Merits	Demerits	Sensitivity	Specificity
1	**Endoscopic**	Histology, culture and RUT at a time	Virus, Bacteria contamination, Invasive	95-98%	95%
	Biopsy	Associated lesion can be diagnosed	Inter-observer variability	95-98%	75-80%
	Culture	*H. pylori* directly seen	Forceps contamination with formalin	Low	High
	RUT	Less expensive	False negative result if bleeding	60%	70%
2	**Urea breath test**	Non-invasive, identify active infection	Radiation exposure	88-95%	95-100%
3	**HpSA (EIA) monoclonal**	Identify active infection, non-invasive, confirm diagnosis, establish eradication	Nil	94-97%	95%
4	**HpSA (ICT)**	Non-invasive	False positive	Low	Low
5	**Serology**	Inexpensive	Validation required	30-40%	Not performed in clinical practice
6	**PCR**	Testing on gastric biopsy	Invasive procedure	Limited use for high cost	90%

RUT: Rapid Urease Test; HpSA: Helicobacter pylori Stool Antigen Test; EIA: Enzyme Immuno Assay; ICT: Immuno Chromatographic Test; PCR: Polymerase Chain Reaction

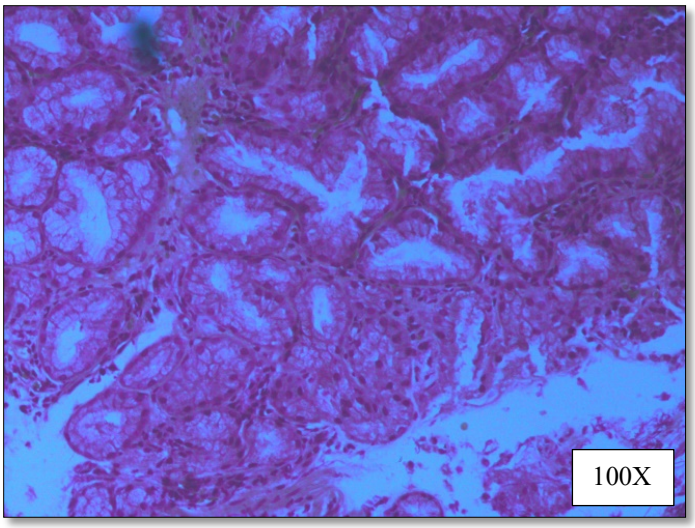

Figure 1. Microscopic features of duodenal ulcer with nodularity at 100x.

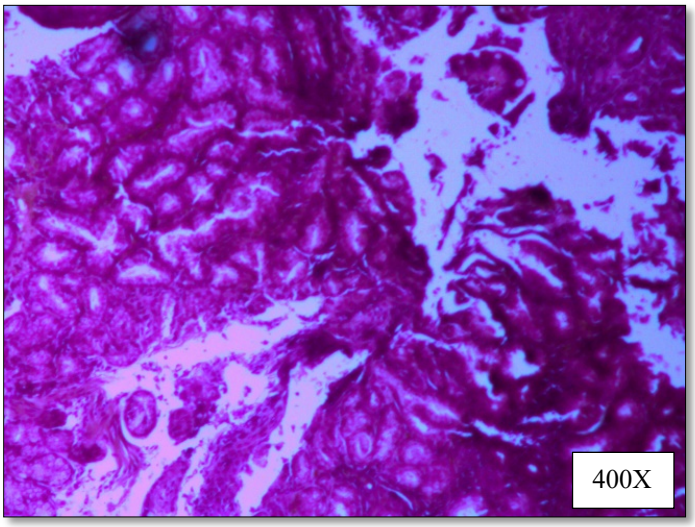

Figure 2. Microscopic features of duodenal ulcer with nodularity at 400x.

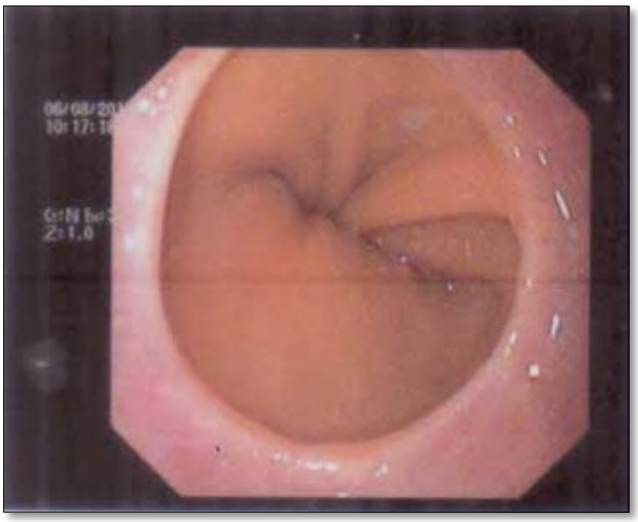

Figure 3. Endoscopic images of normal esophagus.

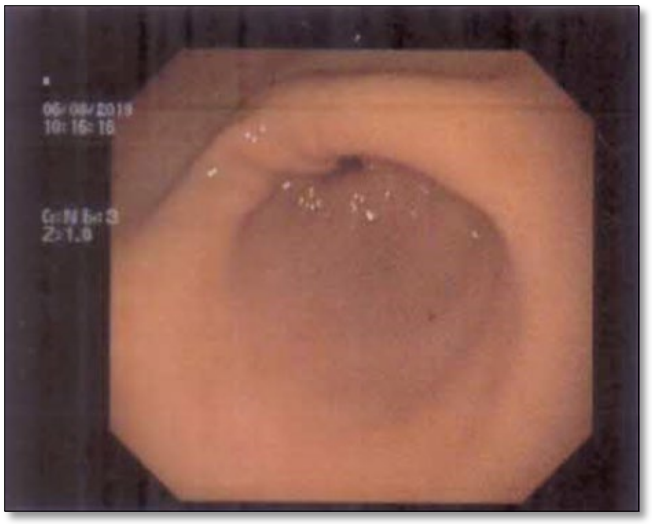

Figure 4. Endoscopic images of normal stomach.

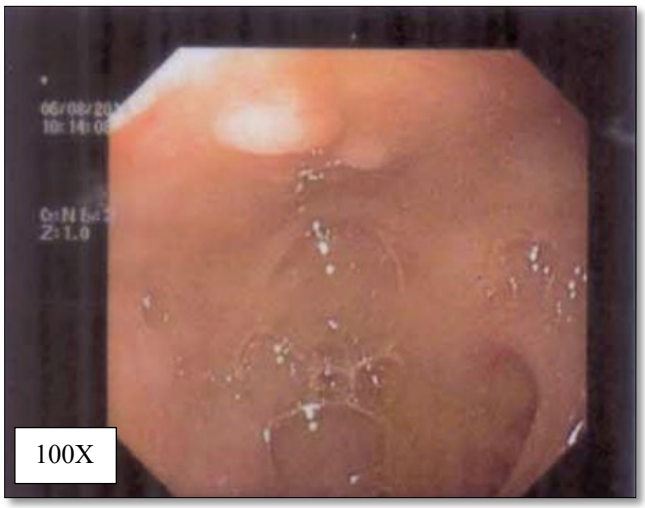

Figure 5. Pylorus-ulcer with nodularity at 100x.

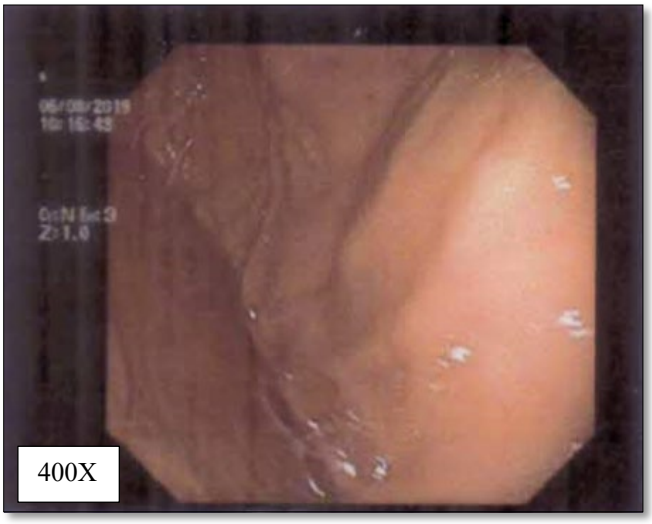

Figure 6. Pylorus-ulcer with nodularity at 400x.

Figure 7. *H. pylori* in pylorus.

CONCLUSION

Endoscopy is not indicated solely for the purpose of establishing *H. pylori* status. Stool antigen test is the choice of test for diagnosis and eradication of the bacteria .It is the most cost effective test in areas of low to intermediate prevalence of *H. pylori*.

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