COMPARISON AND EFFICACY OF TWO DIAGNOSTIC METHODS FOR HELICOBACTER PYLORI DETECTION i.e. SERUM ANTI H. PYLORI ANTIBODIES AND GASTRIC BIOPSY BY H&E AND GIEMSA

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Abstract:
Objective: To evaluate and compare two different techniques for the detection of H. pylori, ie, endoscopic biopsy and antibodies detection.
Study Design: A prospective comparative study based on organization.
Place and Duration of Study: In the Medicine Unit II in collaboration with Surgery department of Services Hospital, Lahore for one year duration from Jan 2018 to December 2018.
Methodology: The study included 100 patients with dyspepsia who had or were suspected to have H. pylori-associated gastric clinical suspicion or with gastric biopsies and serum samples and clinically suspected patients of both age groups and both sexes.
Results: Of the 100 gastric biopsy cases, 90 (90%) had H. pylori. Of these, 52 (57.7%) were male and 38 (42.3%) were female. In ELISA, 68 patients (68%) had antibodies against H. pylori. The male were 38 (55.9%) and females were 30 (44.1%). The specificity and sensitivity of this technique were 75.49% and 60%, respectively.
Conclusion: The positivity of H. pylori is very important in histological examination and detection of anti-H. pylori antibodies in Serum using the ELISA method are the simplest and cheapest.
Key words: *H. pylori, gastric biopsy, giemsa stain.*

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INTRODUCTION:

An investigation of a long-neglected field of gastric bacteriology has gained significant importance since the isolation of Campylobacter from antral biopsy specimens. It is assumed that the human stomach does not have an established bacterial flora, but H. pylori colonizes the stomach mucosa in at least one of a quarter of the adult population. H. pylori were described by Marshall and Warren at Royal Perth Hospital (Australia). There were doubts about the proposed role of H. pylori in the peptic ulcer and chronic active gastritis pathogenesis. The organism was found to cause peptic acid. The disease is reported to be more and more from different parts of the world. It has a worldwide distribution with greater frequency in under developed countries at older ages. It is causally related to chronic active antral gastritis and strongly linked with gastric and duodenal ulcers. It can live the stomach in the acidic medium, through the urease enzyme which transform urea into the ammonia and the CO_2, allowing it to neutralize the acid in its presence. Some of the infected individuals develop duodenal ulcers, while others develop stomach ulcers with different infection prevalence among developing and developed countries. It is also suggested that in the gastric cancer development the H. pylori infection plays a key role. Populations with H. pylori infection have a six-fold increased risk of gastric cancer compared to a non-gastric infection. H. pylori was also defined as a risk factor in approximately 100% of patients with duodenal ulcer for gastric cancer. However, 70% of people with gastric ulcer and more than 80% of patients with gastric cancer have H. pylori infection.

MATERIALS AND METHODS:

This prospective comparative study was held in the Medicine Unit II in collaboration with Surgery department of Services Hospital, Lahore for one-year duration from June 2017 to June 2018.

Hundreds of cases of gastric biopsies, serum samples and stool samples from the patient were included in this study to diagnose H. pylori. The study included patients with dyspepsia who were suspected to have H. pylori-related gastritis in all age groups and in both sexes. Stomach biopsies showing complete denudation or autolytic changes or complete ulcerated superficial epithelium. Patients using NSAIDs or eradication therapy were not included in study. A printed performance Performa was specifically designed to record relevant clinical details and others of each case. The relevant patients' data and Clinical findings were obtained from the endoscopist and directly from the patients.

RESULTS:

This study was conducted to compare the following methods for the detection and specificity of H. pylori. (1) Gastric endoscopic biopsy: Histological examination of tissues for organism detection in H & E and Giemsa staining. (2nd). ELISA method: Serological detection of antibodies from blood samples. Histopathological examination of 100 gastric biopsy specimens revealed H & E and Giemsa.

Table 1: Results of gastric biopsies on H&E & Giemsa stain related to age & sex.

Gastric biopsies	Male				Female				
Age Group	14-32	33-64	65-85	Total	14-32	33-64	65-85	Total	Grand Total
Positive +++	02	03	00	05	01	02	00	03	08
Positive ++	01	02	00	03	01	04	00	05	08
Positive +	20	21	03	52	08	22	00	38	74
Negative	00	04	00	04	02	04	00	06	10
Total	23	30	03	56	12	32	00	44	100

+=Low   ++=Medium   +++=High

Of these, 52 (57.7%) were male and 38 (42.3%) were female. The patients mean age was between 14-85 years and the mean age was 47.9 years. The all 100 patients Blood samples were taken and included in the research for serum separation for analysis by ELISA method.

Table 2: Serum analysis for *H. pylori* antibodies related to age & sex. (n=100)

H. pylori antibodies	Male				Female				Grand Total
Age group	14-32	33-64	65-85	Total	14-32	33-64	65-85	Total	
Positive	17	20	01	38	07	23	00	30	68
Negative	06	10	02	18	05	09	00	14	32
Total	23	30	03	56	12	32	00	44	100

In 68 (68%) of hundred cases, the antibody was found against H. pylori. Of these, male were 38 (55.9%) and females were 30 (44.1%). The specificity and sensitivity of this method were 75.49% and 60%, respectively. P = 0.007 "value. The results of serum anti H. pylori antibodies in 100 gastric biopsies given in Table 3.

Table3: Results of 100 gastric biopsies with serum anti *H. pylori* antibodies

Gastric biopsies	Total	+ve	%age	-ve	%age
H. pylori Positive	90	66	73.3	24	26.7
H. pylori Negative	10	02	20	08	80

The serum H. pylori antibodies specificity and Sensitivity is given in Table 4.

Table 4: Sensitivity & specificity of serum *H. pylori* antibodies

Gastric biopsies		
Serum anti HP antibodies	Positive	Negative
Positive	(a) 66	(b) 02
Negative	(c) 24	(d) 08

Sensitivity=a/ (a+c) ×100=73.33%   Specificity=d/(d+b) ×100=80%

DISCUSSION:

In this study, the H. pylori organism incidence was 90% in endoscopic biopsies, which were favorable for studies conducted by Tzeng et al. (2005) 12 Qureshi et al. (1996) 13 and Rotimi et al. (2000). In 15 patients, 93.81%, 90% and 87% were positive for H. pylori. Although this study is coordinated with previous studies, it is more specific and specific. The Helicobacter pylori on Microphotograph showed in Fig 1,(arrow) on H & E Stain.
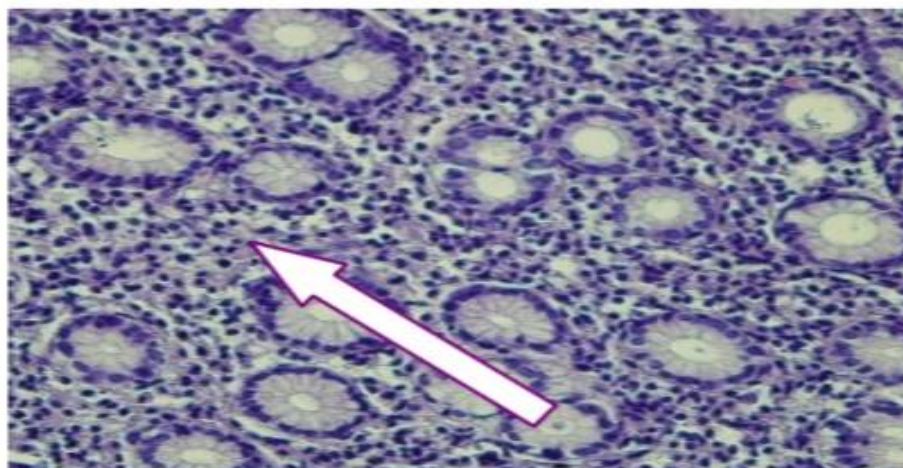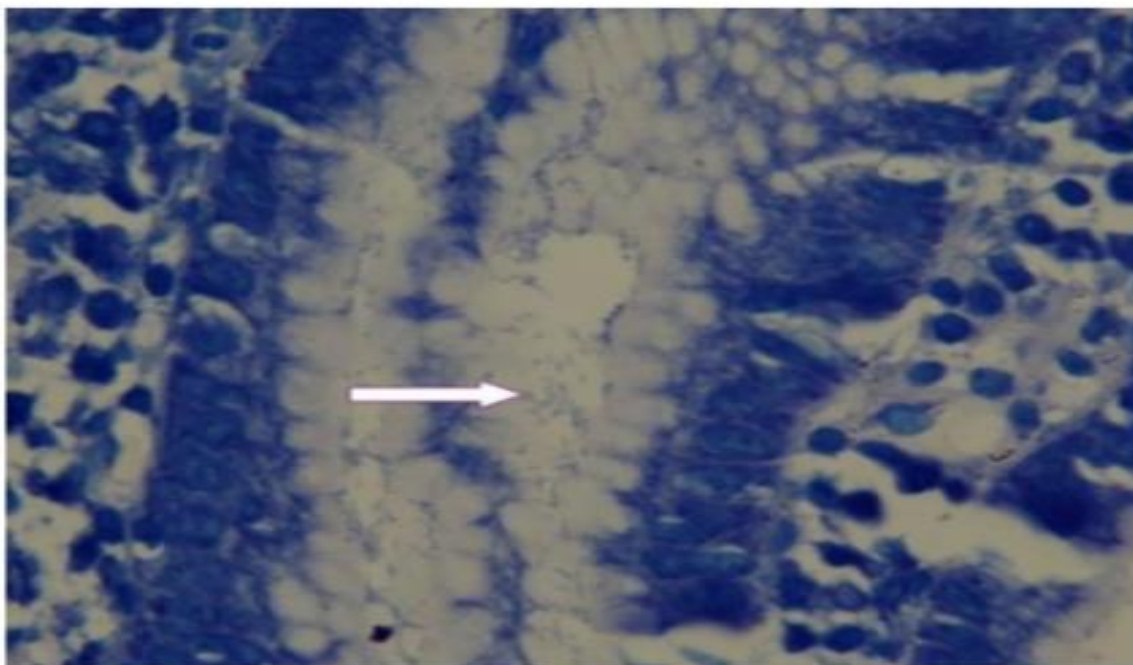

Fig 1: Microphotograph showing *Helicobacter pylori*, (arrow) on H & E Stain.

In this study, 52 (57.7%) of the 90 positive cases for H. pylori were male and 38 (43.3%) were female. However, Tzeng et al (2005) in his work 12, 58 (52.2%) male, 53 (47.7%) female. Qureshi et al. (1996), 72 (90%) cases were positive for H. pylori, 48 (66.6%) were male and 24 (33.3%) were female. Helicobacter pylori (arrow) in Microphotograph showing on Giemsa stain

Fig 2: Microphotograph showing *Helicobacter pylori* (arrow) on Giemsa stain

In this study, the detection of antibodies against H. pylori was 73.3% in the ELISA technique, and these results were also positive for the study of H. pylori by Satti et al. (2004) 15 for the detection of H. pylori. serum, Luthra et al. (1997) showed 87.7% and 63.3% in 16.

CONCLUSION:
Serum analysis for detecting circulating H pylori antibodies in the ELISA technique is simple, noninvasive, inexpensive, easy and effective. Tests can be made even in greenhouses.

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