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Research Article

Serodetection of Helicobacter pylori infection among gastritis patients in Atbara city

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Abstract:

Introduction: This was descriptive cross sectional hospital based study, done in Atbara city from July to October 2021; the aim of this study was to determine the percentage of *H .pylori* infections among gastritis patients in Atbra city. **Method:** A total of 100 stool specimens were collected from patients with gastritis in clean dry containers, the stool specimen was prepared by mixing approximately 50 mg of feces with the extraction buffer, then 2 drops were transferred to the specimen well on ICT cassette and the result was read within 10 minutes. **Results:** The study revealed that 89% of cases were *H .pylori* positive, while only 11% were negative for *H .Pylori.* The study also showed that there was significant statistical correlation between *H. pylori* infection and gender among gastritis cases (p value= 0.01), in which the frequency of *H. pylori* infection was higher in females (57%) than males (32%). The study also denoted that there were no significant statistical correlation between *H. pylori* infection and educational level, the source of food, family history of gastritis, family history of cancer and patient history for peptic ulcer. **Conclusion:** The study concluded that the frequency of *H .pylori infection among* gastritis patients *was* high. There was significant statistical correlation between *H .pylori* infection and gender among gastritis patients.

Keywords: Serodetection, *Helicobacter pylori,* gastritis, Atbara city.

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Introduction:

Gastritis is aggravation, disturbance, or disintegration of the covering of the stomach. It can happen abruptly (intense) ,or slowly (ongoing). [1] Helicobacter pylori (H. pylori) are sort of microorganisms that causes disease in stomach. It is the primary driver of peptic ulcers, and it can cause gastritis and stomach malignant growth. H. Pylori cause persistent irritation by attacking covering of the stomach and creating cytotoxin named vacuolating cytotoxin (Vac-A) and subsequently can prompt ulcer arrangement. [2]

CagA is very much perceived oncoprotein which is infused into have cells by means of a pilus structure called type IV discharge framework, The quality locus that encodes CagA called cag pathogenicity island , After being infused into have cells, CagA adjusts intracellular sign transduction pathways that works with dangerous change of gastric epithelial cells. [3]

H. pylori infection is obtained during youth and continues deep rooted without a trace of treatment with anti-toxins. The greater part of the contaminated people stay asymptomatic for a significant stretch. Thus, long haul colonization of H. pylori can harm the gastric mucosa causing different illnesses of the upper gastrointestinal lot like ongoing gastritis, peptic ulcer, and gastric malignancies, especially gastric disease and gastric mucosa-related lymphoid tissue lymphoma. H. pylori has been perceived as a Class I cancer-causing agent by the International Agency for Research on Cancer and as one of the most grounded realized risk factors for gastric malignancies. [4]

Around 89% of all gastric tumors credited to H. pylori infection and annihilation of this contamination has known to lessen gastric malignant growth occurrence. Gastric malignant growth is positioned 6th in frequency and second in mortality among all tumors overall in view of tmost ongoing worldwide disease insights in 2018. [4]

H. pylori prevalence ranges somewhere in the range of 85% and 95% in emerging nations and somewhere in the range of 30 and half in created nations. The study of disease transmission of H. pylori infection has changed with upgrades in disinfection and strategies for annihilation. Nonetheless, the predominance is still plentiful. In non-industrial nations, the pervasiveness stays the most elevated, which is connected with financial status and levels of cleanliness. [4]After the year 2000, the pervasiveness

of H. pylori became lower than before in European nations. In any case, in Asia, the predominance continues as before. To this date, 4.4 billion people around the world are assessed to be H. pylori-tainted. The region with the most elevated detailed predominance was accounted for in Africa (70.1%) while the least commonness was accounted for in Switzerland (18.9%). In Southern Asia, Pakistan and India have shown the highest H. pylori prevalence (81% and 63.5%, individually). In Western Asia, Turkey introduced the most elevated commonness (77.2%). [4]

Method:

Specimen collection:

The patient was given clean container for collection of stool sample, to bring small amount of fecal specimen without contamination with urine specimen, and not to contaminate the outer surface of container.

Procedure:

The test cassette, buffer left to reach room temperature prior testing, the cap of specimen collection tube were un screw, fecal specimen were stabbed by collection applicator to collect approximately 50mg of feces, the specimen collection tube shake to mix the extraction buffer with the specimen. The tube is left for 2 minutes and the test cassette were removed from foil, and transfer 2 drops to specimen well, the result read at 10 minutes.

Reading and Interpretation of the Results

Positive result: if both C band and T band are developed the test is indicate for the presence of *H .Pylori* antigen in the specimen. The result is positive.

Negative result: if only the C band is developed, the test indicates that no detectable *H .Pylori* antigen is present in the specimen. The result is negative.

Invalid: if no C line is developed, the assay is invalid regardless of any color development on the T line.

False –negative results: may be obtained on specimens from patients who have ingested selected medications (anti-microbial, proton pump inhibitors, and bismuth preparations) within the 2 weeks prior to specimen collection. If clinically indicated, the test may be repeated on a new specimen obtained 2 week after stopping treatment with these medications. [5]

Results:

A total of 100 stool samples were collected from gastritis patients in Kamal altoum compound, life care compound and Atbara

teaching hospital. In this study most of study populations were females (60%) compared to males (40%). The age of study participants were ranged from 15-30 years (19%), 31-45 (24%), and more than 75 years old, most of them were in age group more than 45 years (57%).

The study revealed that the frequency of *H .pylori* infection among gastritis patients was (89%). (**Table.1**)

Table.1: The frequency of *H. pylori* infections among gastritis patients

***H .pylori* infection**	**No**	**Frequency**
Positive	89	89%
Negative	11	11%
Total	100	100%

In this study there was significant statistical correlation of *H. pylori* infection with participant gender (p-value 0.01), in which the percentage of infection was higher in females (57%) than males (32%). (**Table 2**)

Table (2): The correlation between *H. pylori* infection and gender among gastritis patients

Gender	***H. pylori* infection**		***p value***
	Positive	**Negative**	
Male	32(32%)	8(8%)	
Female	57(57%)	3(3%)	**0.019**

The study revealed that there was no significant statistical correlation of *H. pylori* infection with age (P value=0.1) **Table (3)**, eating source (p value=0.7) **Table (4),** history of peptic ulcer (p value=0.2) **Table (5),** history of gastritis (p value=0.06) **Table (6)**, or history of cancer (p value=0.2). **Table (7)**

Table (3): The correlation between *H. pylori* infection and age among gastritis patients.

Age	***H .pylori* infection**		***p value***
	Positive	**Negative**	
>30	18(18%)	1(1%)	
30-45	19(19%)	5(5%)	0.1
< 45	52(52%)	5(5%)	

Table (4) : The correlation between *H .pylori* infection and eating source among gastritis patients

Eating source	*H .pylori* infection		*p value*
	Positive	Negative	
Home	53(53%)	6(6%)	**0.7**
Restaurant	36(36%)	5(5%)	

Table (5): The correlation between *H .pylori* infection and those who previously have ulcer among gastritis patients

History of gastric ulcer	*H .pylori* infection		p value
	Positive	Negative	
Yes	48(48%)	8(8%)	**0.2**
No	41(41%)	3(3%)	

Table (6): The correlation between H *.pylori* infection and family history of gastritis among gastritis patient

Family history of gastritis	*H .pylori* infection		p value
	Positive	Negative	
Yes	56(56%)	10(10%)	**0.06**
No	33(33%)	1(1%)	

Table (7): The correlation between *H .pylori* infection and family history of cancer among gastritis patients

Family history of cancer	*H .pylori* infection		p value
	Positive	Negative	
Yes	9(9%)	0(0.0%)	**0.2**
No	80(80%)	11(11%)	

Discussion:

In this study out of 100 gastritis patients, (89%) were *H .pylori* positive and only (11%) were *H .pylori* negative, this finding was differ from result obtained by Palmer *et al* in North West province of Cameron, who showed a lower frequency of *H. pylori* infection (72%). [6]

The study denoted that there was significant correlation between gender and *H .pylori* infection (p-value 0.01), these result was similar to that of (Tay *et al*, 2008) who denoted that there was significant correlation of *H .pylori* infection (p-value 0.02). However other study conducted by (Nathan *et al.,* 2018), found that there was no significant correlation of infection with gender. This difference may be attributed to very big sample size applied by (Nathan *et al.,* 2018) which was 500 participants in comparison to only 100 participants in this study. [7], [8]

In this study the highest rate of infection was noticed among age group more than 45 years old (52%), and declared that there was no significant correlation between *H .pylori* infection and age (p-value 0.1). This result was similar to result obtained by (Adlekha *et al.,* 2013) in Karla, India, who indicate that there was no significant statistical difference in age related to *H. pylori* with (*P* -value 0.93). [9]

The frequency of *H. pylori* infection among illiterate participants was (28%), in elementary level was (21%), in secondary level was (16%) and in university level was (24%), the results showed that there were no correlation of *H .pylori* infection with educational level of participants (p-value 0.4). Similar results were obtained by (Rahul *et al*., 2013,) who found that education is not associated with disease status (*P* value = 0.23). This may be attributed to absent of commitment with personal hygiene rules

including hand washing measures among both educated and non-educated persons. [10]

Results of this study showed that the occurrence of *H .Pylori* infection among participants had no statistical significance with places of taking meals (p-value 0.7). This finding is same to study done by (Kathleen *et al.,*; 2002) in Bolivia who found that the place of food consumption was not significant in the transmission of *H .pylori*. This fact may indicate that *H. pylori* transmission is mostly depend on personal hygiene behaviors especially hand washing behavior rather than other sources of contamination. [11]

The study revealed that there was no significant statistical correlation between patient history of gastric ulcer and *H. pylori* infection. This result is totally differed from that revealed by (Jose *et al*., 2007) in university hospital in South east Brazil, who showed that there is significant correlation between *H .pylori* infection and those who have peptic ulcer before (p-value 0.001). [12]

The frequency of *H. pylori* infection among participants with family history of gastritis infection was higher (56%) than those with no family history of gastritis (33%)**,**The study showed that there was no significant correlation between *H. pylori* infection and family history of gastritis (p-value 0.06). This result was same to result revealed by (Alebia and Kaba, 2016) , who found that there is no statistical significance correlation between family history of gastritis and *H .pylori* infection(p-value 0.9). [5]

Results also showed that family history of cancer shows no correlation with *H .pylori* infection (p-value 0.2). This finding is same to result of study done by (Tovey *et al.,* 2004) in India that reported no association between stomach cancer and *H. pylori* infection (p-value 0.4) . [13]

Conclusion:

The study concluded that the frequency of *H .pylori infection among* gastritis patients *was* high. There was significant statistical correlation between *H .pylori* infection and gender among gastritis patients.

The frequency of *H. pylori* infection was highest among age group of more than 45 years. Frequency of *H. pylori* among illiterate was nearly equal to that of university level among gastritis patients. There were no significant statistical correlations between *H. pylori* infection with family history of gastritis or gastric carcinoma.

Ethical Consideration:

All participants were informed about objectives and purposes of the study, also informed about sample collection procedure, possible discomfort and freedom to choose either to participate or decline to take part in the study.

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