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Identification of Hematological change and Seroprevelance of Helicobacter Pylori infection in patients with perforated Peptic ulcer in district Peshawar KPK, Pakistan

Ihteshamul Haq[1], Fazli Zahir[2], Ronaq Zaman[3], Saima Qayum[3], Maria Mehmood[4], Farzeen Khan[5],Fawad Khalid[6],Zeeshan Shahzad[1], Sumbal Hussain[7], Ibrar Ahmad[1], Shakir Ullah[1], Shumaila Bakht[8], Fatima Syed[9], Fawad Hussain[1], Muhammad Kamran Khan[1]

[1]Department of Biotechnology and Genetic Engineering Hazara University Mansehra KPK **Pakistan**
[2]Department of Allied Health Science Iqra National University Peshawar KPK **Pakistan**
[3]Department of Pathology, Kabir Medical College Peshawar Kpk **Pakistan**
[4]Department of Pathology Khyber Medical College Peshawar KPK **Pakistan**
[5]Department of Community Health Sciences Peshawar Medical College Peshawar KPK **Pakistan**
[6]Saidu Medical College Saidu Sharif Swat KPK **Pakistan**
[7]Department of Biotechnology Abdul Wali Khan University Mardan KPK **Pakistan**
[8]Department of Human Nutrition, the University of Agriculture, Peshawar. **Pakistan**
[9]Institute of Biotechnology and Genetic Engineering Agriculture University Peshawar KPK **Pakistan**

***Correspondence: Ihteshamulhaq384@gmail.com** **Received: 2-03-2021, Revised: 13-07-2021, Accepted:21-07-2021 e-Published: 25-07-2021**

Helicobacter pylori (H. pylori) Infection is a major gastrointestinal tract pathogen that has been involved in a wide range of gastrointestinal infection, with gastritis, dyspepsia, peptic ulcer, gastrointestinal carcinoma, and lymphoma of the lymphoma associated with mucosa. The frequency of H. pylori infection in developing countries, H. pylori infection is more than in developed countries, while Pakistan has inadequate data on its frequency. The Purpose of this study to determine the prevalence of Helicobacter pylori infection in patients with perforated peptic ulcer, this prospective study was conducted in the Department of Surgery at Lady Reading Hospital Peshawar Kp Pakistan, All patients were evaluated by full history, clinical examination and relevant laboratory investigations including. X-ray chest and abdomen, ultrasound abdomen, serum anti H-Pylori, biopsy and histopathology for detection of helicobacter pylori infection and perforation. The data was collected through pre-designed proforma and analyzed by SPSS version 10.00. A total 96 patients were diagnosed as case of perforated peptic ulcer out of total of which 75 were males and 21 were females and majority of patients were more than 30 years of age with mean age of 44.6 years. The serological test for helicobacter pylori was positive in all 96 cases; however histopathology of biopsy yields H. pylori in 73 (76.06%) cases. On exploratory laparotomy perforated duodenal ulcer was found in 75(78.12%) patients while 26(27.08%) patients had perforated gastric ulcer. The biopsy proven prevalence of perforated peptic ulcer, one of the life threatening complications of H. Pylori, was is 78% in this study.

Keywords: Prevalence, Helicobacter pylori, perforated peptic ulcer

INTRODUCTION

Helicobacter pylori (*H. pylori*) are a twist,

gram-negative bacteria that has infected more than 31% individual all over the globe. In a many states, more than 51% population is infected with *H. pylori (*Aguemon et al. 2005). In 1982, Marshall and Warren got Nobel Prize for the identification of helicobacter pylori bacteria. Most of the people studied helicobacter pylori bacteria and almost 29000 different articles published regarding *H. pylori* infection in human. *H. pylori* bacteria is the main cause of different disease of stomach like , gastritis, gastric and duodenal ulcer and gastric carcinoma (Aman et al. 2002) In 1994, *H. pylori* were categorized as class I individual carcinogen for gastric cancer by WHO (Antoon et al. 2004). In most of the cases, *H. pylori*-infected patients show no specific symptoms.

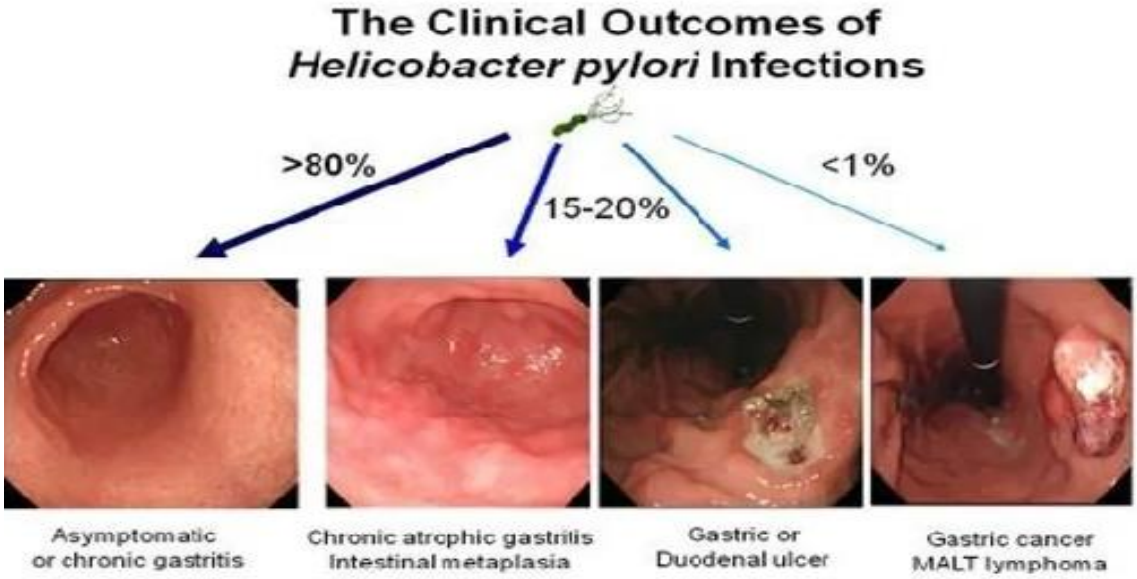


Figure 1: Percentage of different Clinical Symptoms of H.Phylori Infection.

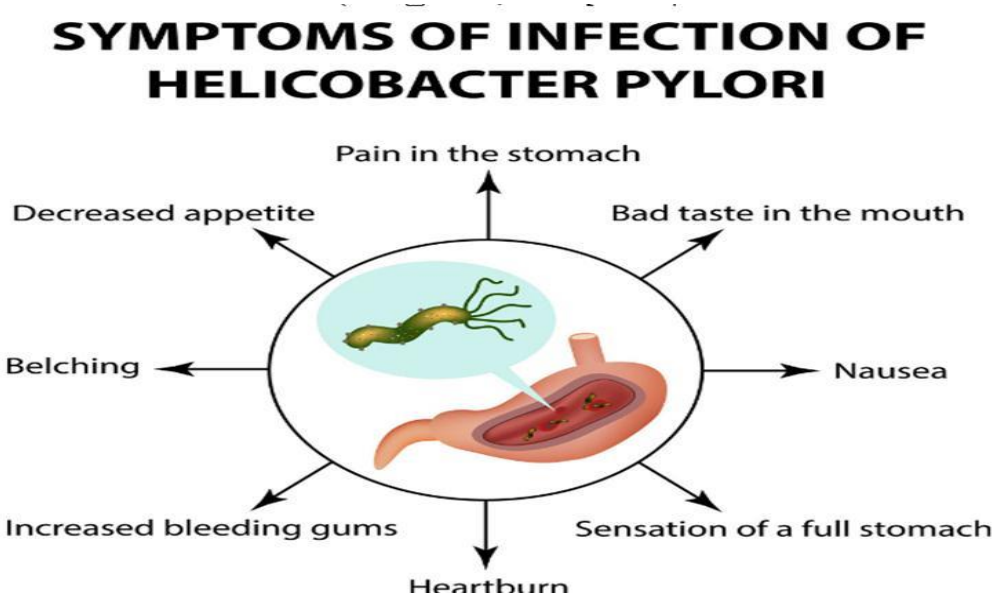


Figure 2: Most Common symptoms of H Pylori infection

Figure 3: Map of District Peshawar.

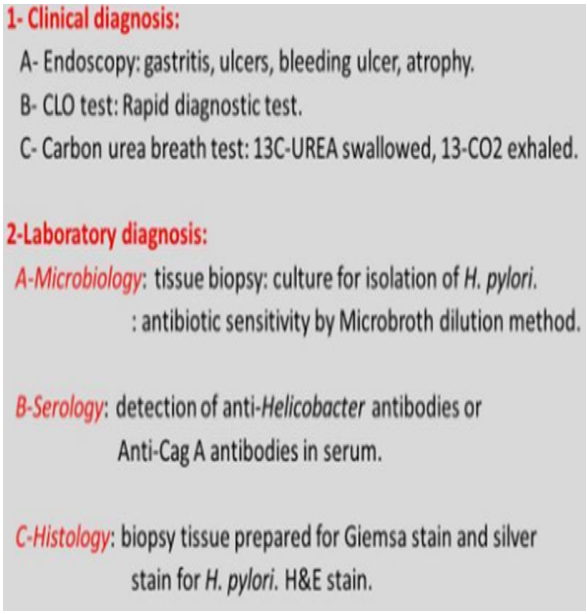
It remains in the stomach of the patient asymptotically for a long period. Symptoms of infection appear after the damage of the lining of the stomach or lining of duodenum (Barbara et al. 2007).

Gastric adenocarcinoma is a cancer of the stomach caused by H pylori which is the 2nd main cause of death worldwide (Bjorkman et al. 2002). As the frequency of *H. pylori* different from place to place and from generation to generation therefore it is assumed that the frequency of gastric cancer is determined by ecological factors rather than genetic factors (Bjorkman et al. 2005). All over the world therapeutic vaccination is the only plan that would make a great variation in the frequency of *H. pylori* disease. In developing countries the prevalence ratio of *H. pylori* is higher than developed countries (Boixeda et al.1994).The frequency rate of *H. pylori* infection is different between the urban and rural populations. the major reason for the different prevalence ratio of *H. pylori* infection is differences involve socioeconomic variation among the different population. the oral-oral or fecal-oral routes is the main way of spreading of *H. pylori* infection, due to unhygienic water system, poor diet and overcrowding is the major causes of *H. pylori* infection and increases the frequency of *H. pylori* infection (Bueno et al. 2001).

In 2016, WHO and International Agency for Research on Cancer (IARC) categorized those Helicobacter *pylori* as class 1 human carcinogen due to its prevalence association to gastric carcinoma (izhar et al. 2014).In Pakistan, the frequency rate of acid peptic infection is very high due to high frequency ratio of *H. pylori* Bacterial disease among individual and the rate of the patient is growing continuously due to the lack of proper diagnosis system and the lack of proper treatment facilities in the private sector health care services. According to health experts in Pakistan if *H. pylori* infection does not treat carefully then they will chronic infection and also chances of stomach cancer and gastric carcinoma will be happened (Ekelund et al. 2006).A few strains of H. Pylori have a strong association with gastritis, duodenitis, peptic ulcer and Stomach cancer. H. pylori infection was seen more frequently in patients with duodenal ulcer than gastric ulcer i.e. 88.9% vs. 60.5% (Essa et al. 2003).The incidence of gastric ulcer perforation, over the last few decades, has declined due to excellent medical treatment *(*Aguemon et al. 2005).In Pakistan, the prevalence of peptic ulcer disease caused by H. Pylori infection is 85.1% (Fuchs et al. 1995). The present study was conducted to assess the Hematological Change and Sero prevelance of H. Pylori in perforated peptic ulcer in District Peshawar Kpk Pakistan.

MATERIALS AND METHODS

The study was conducted in the department of surgery, Lady Reading Hospital KP Peshawar Pakistan from November 2015 to September 2017. Patients of either sex, aged greater than 40 years, diagnosed as having perforated peptic ulcer were enrolled for this study after taking informed consent in local languages. The findings of history, clinical examination, and demographic characteristic were noted for each patient. For all cases baseline investigations such as blood complete picture, blood sugar and urea, serum electrolytes and X-ray chest were performed. Specific investigations such as X-ray abdomen (erect/ supine) to detect free gas under right dome of diaphragm, ultrasound abdomen to detect free fluid in peritoneal cavity and serology (anti H. pylori antibodies) to detect the Helicobacter pylori infection were also done. For histopathological detection of H pylori, biopsy from the edge of ulcer was taken during exploratory laprotomy. The exclusion criteria included patients already on Helicobacter pylori eradication therapy, patients with malignant ulcer with perforation, traumatic perforation and patients who refused to give consent to participate into study.



Statistical analysis

The data presented as number and percent for qualitative variables, while quantitative variables presented as mean and SD ±. . SPSS version 10.00 used as statistical software.

RESULTS

During our study period total 96 cases of perforated peptic ulcer were identified. Of these 96 patients, 75(78.94%) were males and 21 (21.87%) were females with mean age 44.6± ± 9.89 (SD).

The commonest presenting features observed were epigastric / upper abdominal pain 53%, heartburn 47%,nausea 57.51%, vomiting 40(53%), Haematemesis 5.27%,Regurgitation 63.12**%** and constipation 38 (51%). The precipitating factors like use of NSAIDS, cigerrett smoking, and alcoholism were found in 40%, 33%, and 7% respectively. On examination generalized tenderness was present in all cases especially marked in upper abdomen. Abdomen was distended in seventy seven (73%) patients. The abdomen of Seventy five (73%) patients exhibited a board like rigidity and absent bowel sounds. On exploratory laparotomy perforated duodenal ulcer (first part – anteriorly) was found in 70 (67%) patients and 26(33%) patients had perforated gastric ulcer (antrum anteriorly).The size of perorated duodenal ulcer was less than 1-cm but in four (5%) patients the size exceeded 1 cm. Gastric ulcer was also < 1-cm in size but in two (3%) patients it was 1.5 to 2cm in size. Several symptoms obtained from *H. pylori*-infected patients are shown in Table 2.

Table 1: Gender Base distribution of patients

Parameters	Male	Female	Total
Number of cases	75	21	96
Percentage	78.94%	21.87%	100%

Table 2: Several symptoms obtained from *H. pylori*-infected patients

Different Symptom *H. pylori*	Patient percentage (%)
Pain upper abdomen	86.0
Retrosternal Burning	91.0
Regurgitation	63.12
Nausea	57.51
Vomiting	33.32
Haematemesis	5.23

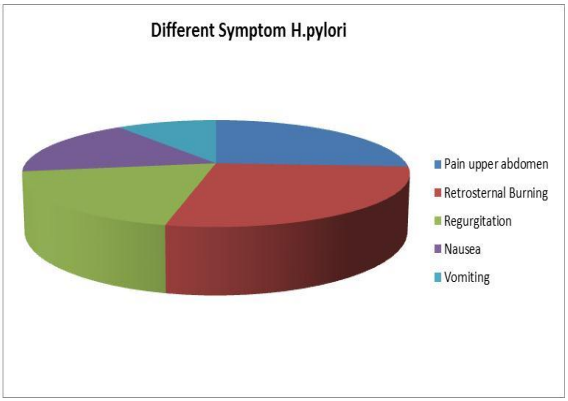


Figure 4: Several symptoms obtained from *H. pylori*-infected patients

Table 3: Age-wise distribution of patients

Age Group	Number of patients % (n)
40-45 years	21 (21.87%)
45-50 51- 55 year	16 (16.66%)
51-55 years	19 (19.79)
56-60 years	11 (11.45)
61-65year	15 (15.62%)
> 65years	14 (14.58)

DISCUSSION

H. Pylori transmission occurs person to person. Therefore health care providers like gastroenterologists, paramedics, and those caring for mentally impaired are at higher risk (Gisbert et al. 2004). The results of this study showed that H. pylori infection is more prevalent in males (73%), another study conducted by Oladejo show the male infected Prevelance ratio are 84% (Graham et al. 2002). Some study suggested that the ratio of H. pylori infection is higher in female (Haq, et al. 2020).The average age estimated in our study was 40-70, though it ranged from 47-71 years in other studies (Kaffes et al. 2003).

Various clinical studies has implicated the role of both H pylori and smoking for precancerous condition of stomach, similarly both these factors are considered responsible to variable extent for complete or incomplete type of intestinal metaplasia (Khan et al. 2012). Although both smoking and coffee drinking are considered to decrease efficacy of medical management of peptic ulcer disease (Konturek et al. 2013). it has been shown that H pylori antibody test is positive in 41% smokers and also tobacco use in any form (smoking or chewing)enhances the risk of gastric ulcer and carcinoma (Mbulaiteye et al. 2009).However we found only 15% smokers with positive H pylori. Therefore both H. pylori infection and smoking are risk factors for acid peptic disorders (Moss et al. 2007). Both Helicobacter pylori infection and non-steroidal anti-inflammatory drugs (NSAIDs) are independent risk factors for peptic ulcer disease, but the potential synergism between these factors is controversial (Oladejo et al. 2007) In patients with history of ulcer disease, new ulcers are expected to develop irrespective of NSAID use; the histamine H2-receptor antagonist reduces the rate of recurrence of H. pylori–related ulcers but found completely ineffective for preventing NSAID-related ulcers Therefore, screening and treatment for H. pylori infection before initiating NSAID therapy may reduce risk for ulcers(Phukan et al. 2005). It has been shown that that in the presence of H pylori infection, alcohol intake is an independent risk factor for development of gastric/duodenal ulcer in Turkish patients(Rasheed et al. 2011). In Beninese population, H pylori infection is almost equally distributed in urban and rural population 75% in urban and 72% in rural residents. The important predictor found were, density of family members (more than 3 persons sharing a room), family contact with infected persons and crowded living. Therefore improvement in living conditions can reduce intra familial H. pylori transmission (Choudhry et al.2011). Although Incidence of perforated gastro duodenal peptic ulcer has reduced to 50% over the last 6 years due to the increased use of proton pump inhibitors (Salih et al. 2007). Though serology for detection of Helicobacter pylori is readily available however, positive serology does not distinguish between active and chronic infection and therefore less specific as compared to other methods. The sensitivity and specificity of serology assay varies from 52-94.5%, and 60-97.2% respectively (Sharma et al. 2006). The biopsy-based methods, on the other hand have a low sensitivity (83%), but a high specificity (100%) (Sharma et al. 2000).In this study histological diagnosis of H. pylori was made in over 81%. Other similar studies report histological diagnosis varying from 60 and 87%. Such wide difference may be due either to different methods used for culture or to high false negative resulting from indiscriminate use of antibiotics hindering growth of this microorganism. Several studies have been under taken to define the association and possible etiological role of H. pylori in perforated peptic ulcer. We found 70% incidence of perforated

peptic ulcer, slightly higher than that reported by Gisbert (World Health Organization et al. 1994). The reason for variation in prevalence could be ethnic background, age of patients selected, and sensitivity of the tests done. Remaining of 33% with peptic ulcer perforation in this study were serum anti H Pylori positive but negative on histopathology.

CONCLUSION

There appears to be an association between H.pylori infection and subsequent perforation of peptic ulcer. Eradication of H-Pylori through antimicrobials and control of associated risk factors like intake of NSAIDS and steroids, smoking, ingestion of alcohol and control of stress through change in life pattern needs is highly recommended.

CONFLICT OF INTEREST

The authors declared that present study was performed in absence of any conflict of interest.

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AUTHOR CONTRIBUTIONS

Authors IHT, FZ, RZ, SQ, MM, FK, and FKH designed the research and performleed the experiments. ZSH, SH, SU, SBanalyzed the data. FS, FH, MKK Wrote and reviewed the manuscript. All authors read and approved the final version.

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