

Saint Paul's Hospital Millennium Medical College

Department of Surgery



Research Report on

Prevalence of H.pylori in Perforated Peptic Ulcer Disease in Saint Paul's Hospital Millennium Medical College: Retrospective Study

By: Eyasu Musie (MD, 4th Year Surgery Resident)

**September 19, 2017
Addis Ababa, Ethiopia**

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Abstract

Objective

To determine Prevalence of H.pylori in Perforated Peptic Ulcer Disease.

Method and Materials

Between January 9, 2013 and February 7, 2018, all patients operated for perforated peptic ulcer disease were recruited retrospectively, from patient's medical records, operation room registration books and computer registration. Demographic data, medical history, past history of peptic ulcer, smoking, alcohol intake, use of NSAIDs, use of chat were recorded using pre-prepared data collecting format. The study included patients who have H.pylori test results attached to the medical records. All patients were treated with exploratory laparotomy and Graham's omental patch done for the majority of them. Immediately after surgery, intravenous cimetidine /omeprazole were initiated. Majority of patients were given eradication therapy regardless of their H.pylori status.

Result

During the 60 months period a total number of 141 patients operated for perforated peptic ulcer disease were recruited and only 46 patients were used for the analysis, since the others were excluded. Their mean age was 34.11 years (Range 17-74 years), thirty nine (84.8%) were male while only 7 (15.2%) are female. Out of 46 patients, 43 (93.5%) patients had perforated duodenal ulcer while only 1 (2.2%) patient had perforated gastric ulcer and other 2 (4.3%) patients found to have sealed duodenal perforation. Thirty two (69.6%) patients had history of chronic dyspepsia. Five patients (10.9%) were smokers. Six patients (13%) were alcoholic. Seven patients (15.2%) were chat chewer. 10 (21.7%) patients had positive stool antigen test. When we see serology test result, 11(23.9%) patient had positive result. Overall, 19 (41.3%) patients had positive result regardless of types of test used.

Conclusion

This study showed relatively low prevalence of H.pylori (41.3%) and therefore, a cost effective initial approach is to test for H.pylori and treat the infection if the test is positive. If H.pylori test is negative, empiric therapy with acid suppressant or prokinetic agent recommended.

Key words: Perforated peptic ulcer, Peptic ulcer, Helicobacter Pylori, Eradication therapy

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List of Acronyms and Abbreviation

1. A	Advisors
2. AA	Addis Ababa
3. Apr	April
4. DC	Data collectors
5. Dec	December
6. EC	Ethiopian Calendar
7. Feb	February
8. H.pylori	Helicobacter Pylori
9. HPI	Helicobacter Pylori Infection
10. IgA	Immunoglobulin A
11. IgG	Immunoglobulin G
12. Mar	March
13. MD	Medical Doctor
14. Nov	November
15. NSAID	Non-steroidal anti-inflammatory drugs
16. Oct	October
17. PI	Primary investigator
18. PU	Peptic ulcer
19. PUD	Peptic ulcer disease
20. Sept	September
21. SPHMMC	Saint Paul's Hospital Millennium Medical Collage
22. SPSS	Statistical package for social scienc

Introduction

Background

Helicobacter pylori is a spiral-shaped gram-negative rod and it is oxidase-positive and catalase-positive; and also a strong producer of urease. It is the most common cause of chronic gastritis and present in 90% of cases¹. *H. pylori* infection is associated with poverty, household crowding, limited education, and African-American or Mexican-American ethnicity. Colonization rates exceed 70% in some groups and vary from less than 10% to more than 80% worldwide. In high-prevalence areas infection is often acquired in childhood and then persists for decades, explaining the direct correlation between colonization rate and patient age¹. The mode of transmission is not well defined, but humans are the only known host, making oral-oral, fecal-oral, and environmental spread the most likely routes of infection. In western countries the percentage of people with *H.pylori* infection is roughly matches age (i.e., 20% at age 20, 30% at age 30, and 80% at age 80)². Prevalence is higher in third world countries where it is estimated at about 70% of population, whereas developed countries show the maximum of 40%².

The term, peptic ulcer disease (PUD), also known as a peptic ulcer, is a break in the lining of the stomach, first part of the small intestine, or, occasionally the lower esophagus; complicated PUD is when patients present with complication (i.e. : bleeding , perforation and obstruction)³.

Several methods may be used to diagnose *H.pylori* infection. These tests are: serological tests, urea breath test, endoscopy with biopsy (biopsy urease test, histologic identifications of organism, culture of biopsy specimen⁸.

Statement of Problem

Gastric and duodenal perforation are common complication of peptic ulcer disease (PU D) and *Helicobacter pylori* (*H.pylori*) infection plays a crucial role in the pathogenesis of PUD. More than 95% of patients suffering from duodenal ulcer and about 70-80% of patients with gastric ulcers are *H.pylori* positive².

PUD had a tremendous effect on morbidity and mortality until the last decades of the 20th century when epidemiological trends started to point to an impressive fall in its incidence². Despite recent advances in both diagnosis and management of PUD, namely the improvement in endoscopic facilities, eradication of *H.pylori* and the introduction of protein pump inhibitors, complications such as peptic ulcer perforation remains a substantial healthcare problem. This may be due to an increase in the risk factors for peptic ulcer complication⁴.

About 50% of world's population infected by *H.pylori*, a major cause of chronic gastritis⁵; one of whose complication is perforation. Perforation occurs in 2- 10% of PU patients and account for more than 70% of deaths associated with PUD⁶. Being life threatening complication of PUD, it needs special attention with prompt resuscitation and appropriate surgical management to reduce mortality.

Even though there is enough data regarding the relationship between uncomplicated PUD and H.pylori (90-100%), data regarding perforated PUD and H.pylori is limited⁷.

In our Hospital, Perforated PUD is becoming one of the commonest surgical emergency that require immediate intervention. In our country, there are some Hospital based studies on association of H.pylori infection and Uncomplicated PUD. And also there are some studies on complicated PUD, but their H.pylori status was not known.

Justification of the Study

There is no study done on the Prevalence of H.pylori in Perforated PUD in our Set up as well as in our country. Therefore, this study going to be conducted to determine H.pylori status of our patients ;and the result will enable us to go for or against eradication therapy to prevent subsequent recurrence and reperforation at the time of discharge of the patients. And also, Study will enable us to know the magnitude of the problem and its variation in different geographic area; so that decision makers of the institution will use the information for priority setting and make decision based on existing evidence.

Literature Review

Incidence and prevalence of uncomplicated peptic ulcer (PU) disease have decreased in recent years, most probably because of the identification and availability of treatment for *Helicobacter pylori* infection and wide usage of Proton pump inhibitors; however, admission due to hemorrhage and perforation remained relatively steady⁶. In study by Hanak Guzel et al.⁶, Perforation occurs in 2- 10% of PU patients and account for more than 70% of deaths associated with PUD. In another study by Di Saverio et al⁹. , Every year PUD affects 4 million people around the world. And complication encountered in 10-20 % of these patients and 2-14% of the ulcers perforate.

Regarding socio-demographic conditions, in the majority of literature which is done in the different part of the world, majority of patients diagnosed with perforated PU were male patients. In study done by Gajendra et al, total 50 cases of perforated peptic ulcer were identified during study period. Out of 50 cases 35 (70%) were males and 15 (30%) were females with mean age 45.8 ± 10.76 ³. Jurg Metzger et al, also reported 29 (62%) male patients with perforated PUD out of 47 patients, with their mean age was 64 years (range 27-91 yr)². Asad Allah et al. and Hanak et al., also had reported higher proportion of male patients with perforated PUD. ^(4, 6) In study done in Tikur Anbessa Hospital²⁰: on complicated PUD ; out of the 351 patients with complicated PUD , the number of male patients is almost seven fold to that of female patients and the mean age was 36.5 ± 12.7 year.

Now a day, association of *H.pylori* infection with peptic ulcer disease became well established fact, however; data regarding association between perforated PUD and *H.pylori* infection are conflicting; Indeed, *H. pylori* infection rates range from 0 to 92%². Taking NSAIDs and Aspirin are associated with PUD; and also epidemiologic studies also showed smoking and stress as a risk factors, however no association was found between alcohol intake and PUD⁵. Study done by Asad Allah et al., out of 85 patients with perforated PUD only 11(12.94 %) patients had history of NSAIDs intake⁴. Unlike other studies, in study by Binn John, et al, there was no significant association between the incidence of *H. pylori* infection in peptic ulcers with smoking and NSAIDs intake⁷. In study by Nojkov B et al¹⁶, alcohol impairs ulcer healing and alcoholism decreases patient compliance with recommended therapies. it is toxic to gastric mucosa, and stimulates gastric acid secretion. However, these factors do not completely explain the increased prevalence of PUD with advanced Alcoholic Liver Disease.

When we come to that of diagnostic methods, histopathology is said to be gold standard⁸. However, different diagnostic methods are used in different set-up according to its availability; some of the widely used diagnostic tests are serology, urea breath test and biopsy (culture, histopathology and biopsy urease test). Gajendra et al. ⁽³⁾, 50(100%) of patients was found to be positive serologically for HPI; however, only 70% was found to be positive by histopathology. Sensitivity and specificity of serologic assay varies from 52-94% and 60-97% respectively. On the other hand biopsy based methods have a low sensitivity but high

specificity. In study done by Jurg et al.⁽²⁾, out of 47 patients 73.3% was found to be positive for H.pylori infection by urea breath test.

Patients with Perforated peptic ulcer usually presents as an acute abdomen. The patient can often give the exact time of onset of the excruciating abdominal pain. Initially, a chemical peritonitis develops from the gastric and/or duodenal secretions, but within hours a bacterial peritonitis supervenes. The patient is in obvious distress, and the abdominal examination shows peritoneal signs. Usually, marked involuntary guarding and rebound tenderness is evoked by a gentle examination. Upright chest X-ray shows free air in about 80% of patients⁵. In study done by Young Joo Yang et al¹⁵, majority of patients (92.2%) complained abdominal pain and 16(4%) patients experienced melena or hematemesis. In another study done in southern Nigeria, the common presenting symptoms were severe epigastric pain, vomiting and abdominal distention in 36 (100%), 22 (66.7%), and 10 (27.8%) patients respectively¹⁷.

Study done in Switzerland (47 patients, 29 male & 15 female) revealed that 33 (73.3%) of patients are positive for H.pylori. This study shows that there is an evident association between H.pylori infection and acute perforated PUD, regardless of chronic NSAID use. They concluded that H.pylori infection status should be assessed at the initial endoscopy or operation regardless of concomitant NSAID intake. If H.pylori infection is found, an appropriate eradication therapy should be initiated as soon as possible².

A Study done in Pakistan (85 patients, 77 male and 8 female) found that patients with chronic dyspepsia (47 out of 54) (87 %) had high prevalence of H.pylori while patients while patients with NSAIDs (4 out of 11) had low (37%) prevalence. In 20 patients no underlying risk factors could be demonstrated and all were negative for H.pylori. This study shows that patients having history of chronic dyspepsia and presenting with perforated peptic ulcer are usually infected with H.pylori and therefore it is recommended that these patients may be treated with eradication therapy⁴. In another study there by Agha Ahmed Hussain et al, they had 75 cases of perforated PUD and all were positive for H.pylori by serologic test; however histopathology of biopsy yields H.pylori in 50(66.6%) cases. Therefore, biopsy proven prevalence of H.pylori was 67%¹⁸.

A meta-analysis of randomized controlled trials on Eradication of H.pylori for prevention of ulcer recurrence after simple closure of perforated ulcer was done in Taiwan: it included 5 randomized controlled trials and 401 patients. A high prevalence of H.pylori infection occurred in patients with perforated peptic ulcers. Eradication of H.pylori significantly reduced the incidence or ulcer recurrence at 8 week (risk ratio 2.97; 95% confidence interval: 1.06 – 8.29) and 1 year (risk ratio 1.49; 95% confidence interval: 1.10 – 2.03) post-operation. The rate of H.pylori eradication was significantly higher in the treatment group than in the non-treatment group¹².

Study in United Kingdom on epidemiology of duodenal ulcer perforation; 68 cases (36 males & 32 females) and age standardized incidence rate was 3.77 per 100,000 population. H.pylori infection assessed in only 14 (20.6%) patients; 2 were positive, 3 were negative, and in the rest the results were unrecorded¹⁰.

From Study in Texas on Surgical therapy of peptic ulcers in 21st century, 43 of 128 upper gastrointestinal operation were performed for PUD. Fifty-five (81 %) operations were performed for perforation or bleeding. Forty-seven percent of patients were documented to be H.pylori positive. H.pylori status is unknown in 19 % of the patients, generally because they died in the perioperative period before their H.pylori status could be determined¹¹.

Unlike other studies that came up with high prevalence of HPI in perforated PUD , study done in Malaysia came up with negligible prevalence of HPI , only two out of 742 patient were positive for Helicobacter pylori infection and both of the patients were of non-Malays in origin¹³.

Research done in the southern part of the Ethiopia in Yirga Alem General Hospital by Thor-Henrik Henriksen et al., Helicobacter pylori infection was detected in 93% of 174 patients with peptic ulcer compared with 63% of 116 patients with normal finding in a cohort of 834 consecutive patients examined by gastroscopy¹⁴ . However, there is no study done on the prevalence frequency of Helicobacter pylori infection in the perforated PUD in the country.

Objective

General Objective

- To determine prevalence of H.pylori in perforated PUD at SPHMMC, Addis Abeba, Ethiopia.

Specific objectives

1. To determine prevalence of H.pylori infection in Perforated PUD
2. To describe socio-demographic characteristics of patients with Perforated PUD
3. To identify proportion of patients that require eradication therapy

Methodology

Study design

- Hospital based Retrospective descriptive study used to assess Prevalence of H.pylori in perforated PUD in adult patients who had been operated for Perforated PUD in SPHMMC in the study period.

Study Period

- Study included patients who were operated from January 9, 2013 to February 7, 2018 (5 years)

Study Area

- The study was conducted in St Paul's hospital (SPH) which is located in the Northern part Gullale Sub-city, Addis Ababa, Ethiopia. It is the second big Hospital in Addis Ababa which serves as a Referral center for patients from Addis Ababa and all over the country. The hospital has a total of 1200 professionals and supporting staffs and 450 beds. It is also a teaching hospital for SPHMMC & AAU for both under graduate and post graduate students. The hospital has Surgery, Gynecology/obstetrics, and Internal medicine, Pediatrics, Radiology, Ophthalmology, Psychiatry, Pathology, Dermatovenereology, ENT, Dentistry and Maxillofacial Departments.

Target or Reference Source Population

All patients operated for acute abdomen in SPHMMC.

Study Population

- The study included all patients operated for perforated PUD during the period of study

Sampling Technique

- Non probability sampling method was used since all sampling units available during study period are involved.

Sample Size

- Since there is no available data which shows previous frequency of H.pylori in perforated PUD in patients operated for perforated PUD in SPHMMC , we will use $p=0.5$, with $CI=95\%$ and margin of error 0.05 .
- The minimum sample size required, for a very large population ($N' > 10,000$) is :

$$N = Z^2 p (1-P)/d^2$$

Where:

- N = minimum required sample size

- P = population proportion in problem (estimated prevalence) = 0.5
- d = degree of accuracy (estimated error) = 5% or 0.05
- Z = the standard normal value at confidence interval of 95% = 1.96
- $N = (1.96)^2 \cdot .5 \cdot (1-0.5) / (.05)^2 = 384$
- The minimum sample size from single population = 384

Modified formula for population $N' < 10000$ is as follow:

- $n = N / (1 + N/n)$
- In our Hospital , on average about 4 patients being operated for Perforated PUD monthly , so estimated number of cases over 5 years will be 240(4x 60)
- $n = 384 / (1 + 384/240) = 384 / (1 + 1.6) = 384 / 2.6 = 147.776.8 \approx 148$

Study Instrument

- Patients' medical records, Ward and Operation room Registration Books were used to Collect Data.

Study Variables

Dependent variables:

- Perforated PUD ,

Independent variables:

Age, sex, religion, sociodemographic status, HPI

Inclusion and Exclusion Criteria

Inclusion criteria

Adult Patients who had been operated for perforated PUD in SPHMMC during study period

Exclusion Criteria

Patients whose status of H.pylori is not known

Patients whose age is less than 15 years.

Data Collecting Method

Data was collected by primary investigator from medical record, operation room registration books and computer registration. Demographic data, medical history, past history of peptic ulcer, smoking, alcohol intake, use of NSAIDs, use of chat were recorded using pre-prepared data collecting format.

Data Analysis

Data was analyzed using SPSS for window version 20.0

Operational Definition

Adult: age greater than 15 years

Limitation of the Study

Majority of the patients didn't have H.pylori test result and therefore, excluded.

Plan for dissemination of findings

- The finding will be Published and submitted to SPHMMC, SPH, SPHMMC library and other concerned bodies.

Ethical Consideration

- Ethical Clearance was approved by the IRB of SPHMMC

Results

During the 60 months period a total number of 141 patients operated for perforated peptic ulcer disease were recruited and only 46 patients were used for the analysis, since the others were excluded. Their mean age was 34.11 years (Range 17-74 years) (Figure 4, below), thirty nine (84.8%) were male while only 7 (15.2%) are female (Figure 1, below). About 26 (56.6%) patients were from Addis Ababa and 20 (43.5%) patients were from other part of the country (Figure 2, below). Regarding their religion, 21 (45.7%) patients were orthodox, eight (17.4%) were Muslims, two (4.3%) were protestant and for 15 (32.6%) their religion is not known. Out of 46 patients, 16(34.8%) were single, 14 (30.4%) patients were married and for 16 (34.8%) patients their marital status were not known (figure 3, below). For the majority of the patients their occupation status were not mentioned in their medical records and eight (17.4%) patients were self-employee, two (4.3%) patients were student and one (2.2%) patient was civil servant(Figure 5, below).

Out of 46, patients five (10.9%) patients were smokers, six (13 %) patients were alcoholic, seven (15.2 %) patients were chat chewer. For the majority of the patients their smoking habits, alcohol drinking habit and chat chewing habit were not documented in their medical records. None of the patients had documentation about history of use NSAIDs. Seven (15.2%) patients had history of previous PPI use and only one (2.2%) patient had history of previous eradication therapy. Nineteen (41.3 %) patients had blood type O, nine (19.6%) patients had blood type A, six (13%) patients had blood type B and four (8.7%) patients had blood type AB and for eight patients their blood group were not documented (Figure 6, below).

About 32 (69.6%) of patients had history of chronic dyspepsia whereas fourteen (30.4%) had acute presentation (Figure 7, below). Twenty four (52.2%) presented in less than 24 hours of onset of abdominal pain, 13 (28.3%) patients presented between 24 to 72 hours and nine (19.6%) patients presented after 72 hours after onset of abdominal pain. About nine (19.9%) patient had nausea, 38 (82.6%) patient had vomiting, 14 (30.4%) patients had anorexia, 30(65.2%) had epigastric pain, 43 (93.5%) patient had diffuse abdominal pain, six (13%) patients had abdominal distention and almost all (95.7%) patients had peritonitis at the time of presentation.

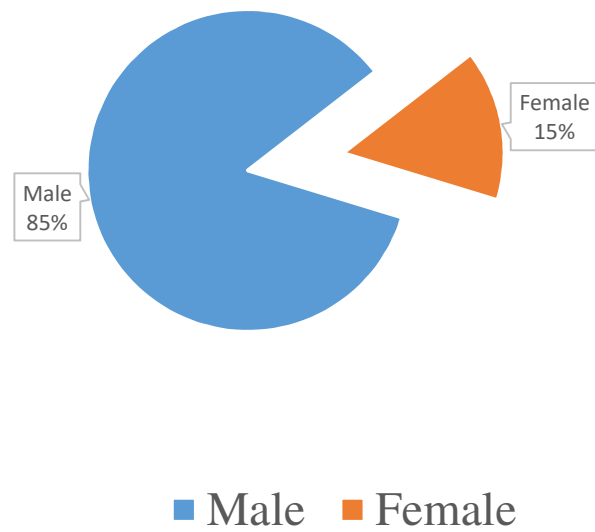


Figure -1: Sex distribution of patients operated for perforated PUD at SPHMMC from January 9, 2013 to February 7, 2018

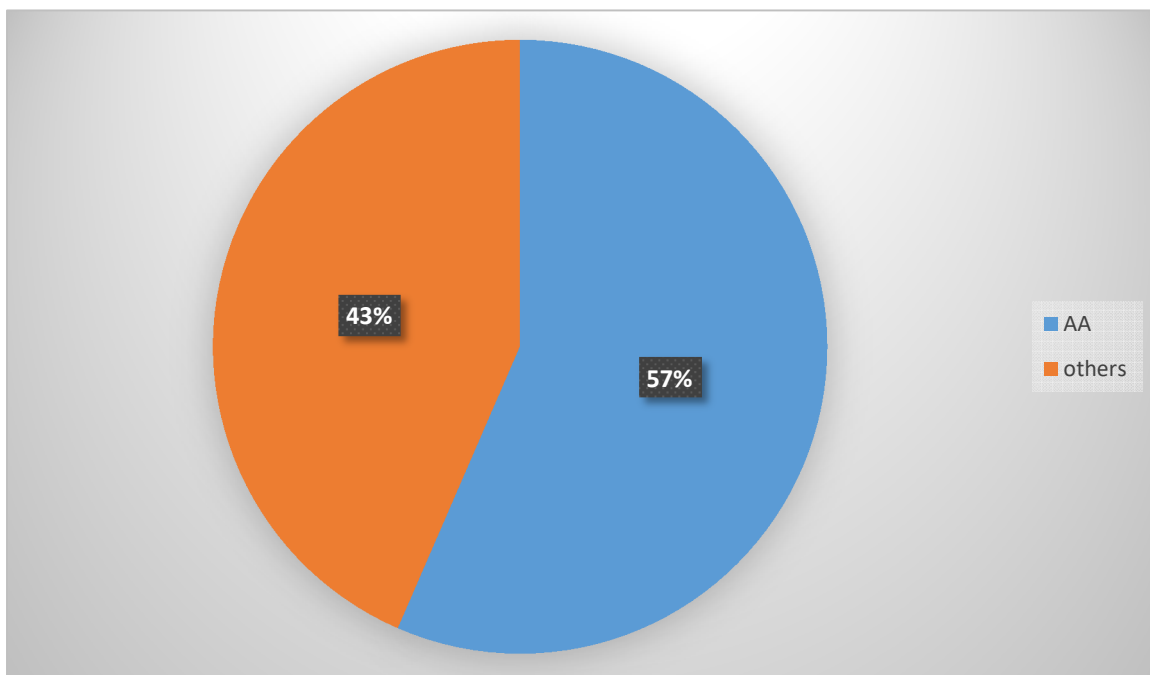


Figure 2: Regional distribution of patients operated for perforated PUD at SPHMMC from January 9, 2013 to February 7, 2018

All 46 patients had H.pylori test result attached to their medical records. Only two types of tests were used (i.e stool antigen test and serology). Out of 46 patients, ten (21.7%) patients had positive result for stool antigen whereas 11 (23.9 %) patients had positive serology result for H.pylori. Two (4.3%) patients had positive results for both tests. Overall, 19 (41.3%) patients had positive result regardless of types of test used (Table 1 and Table 2, below).

Table 1: Stool antigen test results of patients operated for perforated PUD at SPHMMC from January 9, 2013 to February 7, 2018

Stool antigen test result	Frequency	Percent
Positive	10	21.7
Negative	17	37
Unknown	19	41.3
Total	46	100

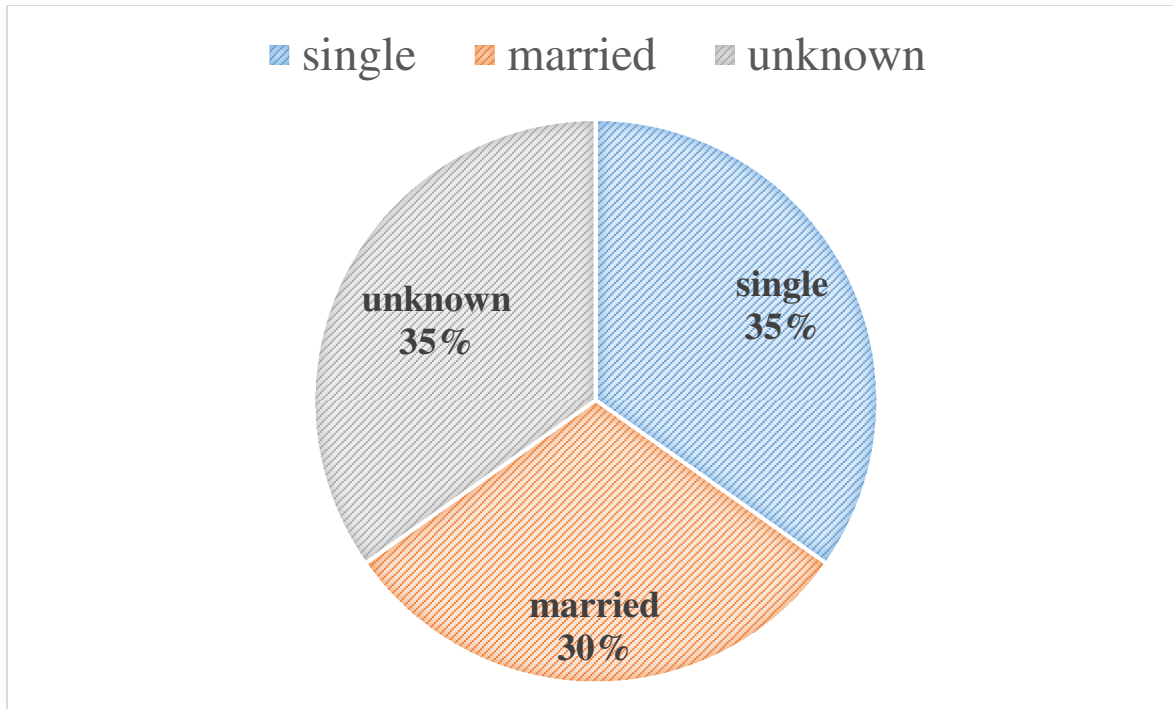


Figure 3: Marital status of the patients operated for perforated PUD at SPHMMC from January 9, 2013 to February 7, 2018

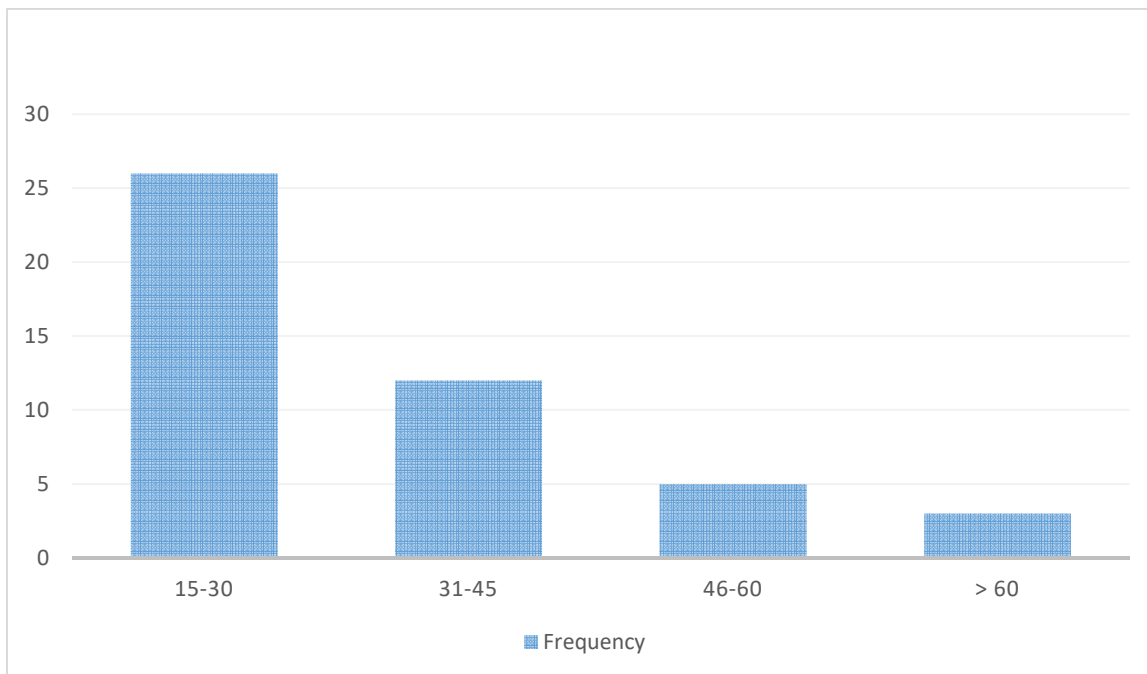


Figure 4: Age distribution of patients operated for perforated PUD at SPHMMC from January 9, 2013 to February 7, 2018

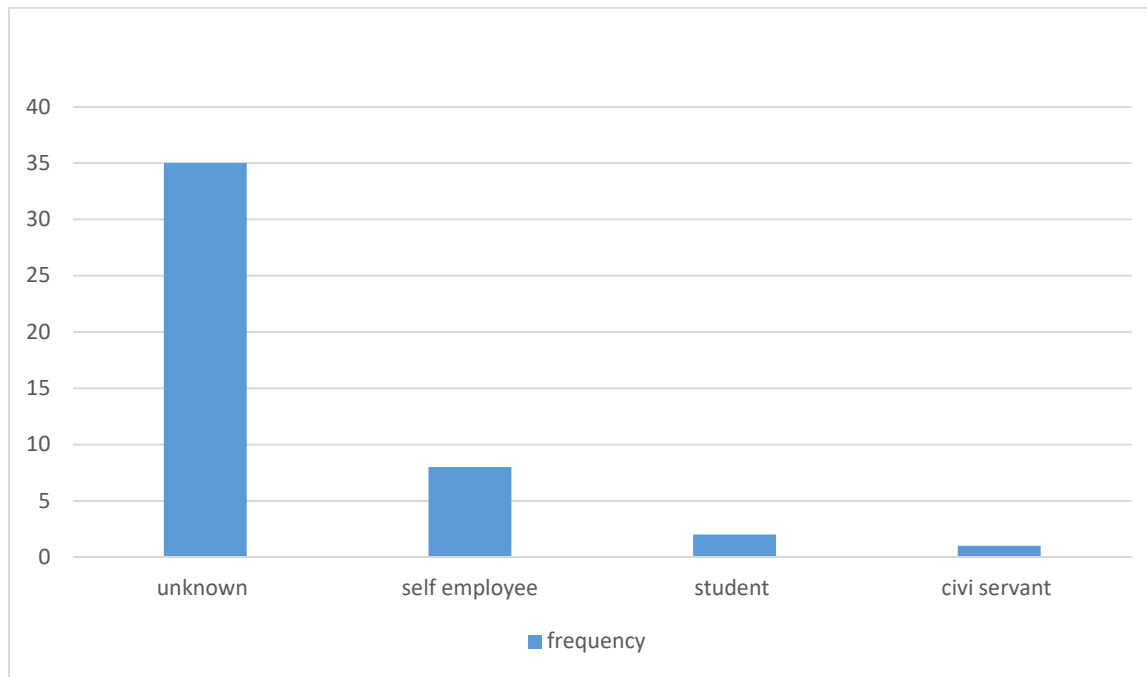


Figure 5: Occupation of patients operated for perforated at SPHMMC from January 9, 2013 to February 7, 2018

Intraoperatively, 43 (93.5%) patient had perforation on the first part of duodenum, one (2.2%) patient had gastric perforation and two (4.3%) patient had sealed perforation. For all patients graham's omental patch were performed except two patients with sealed perforation. And for 26 (56.5%) patients, duration of surgery were ranging from 60 to 120 minutes; for 19 (41.3%) patients, it was less than 60 minutes. And it was more than 120 minutes only for one patient. All patients had pre-operative stay of less than 24 hours; twenty three (50%) patient had post-operative stay of less than one week, eleven (23.9%) patient had about 1- 2 weeks and five (10.9%) patients had greater than 2 weeks. During their hospital stay, five (10.9%) patients developed deep and superficial surgical site infection, 2 (4.3%) were dead. Forty four (95.7%) patients were discharged improved. Out of 46 patients, 26 (56.5%) patients were given eradication therapy and 34 (73.9%) patients were given PPI (alone or as a part of eradication therapy).

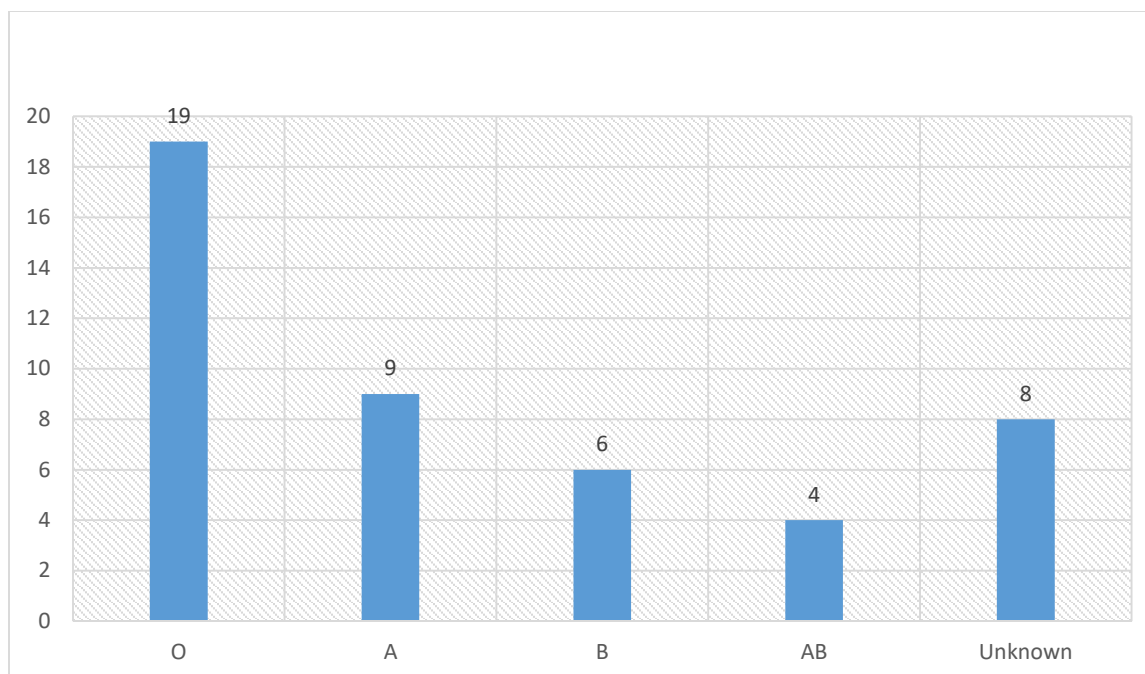


Figure 6: Blood types of the patients operated for perforated PUD at SPHMMC from January 9, 2013 to February 7, 2018

Table 2: Serology test result for patients operated for perforated PUD at SPHMMC from January 9, 2013 to February 7, 2018

Serology test result	Frequency	Percent
Positive	11	23.9
Negative	13	28.3
Unknown	22	47.8
Total	46	100

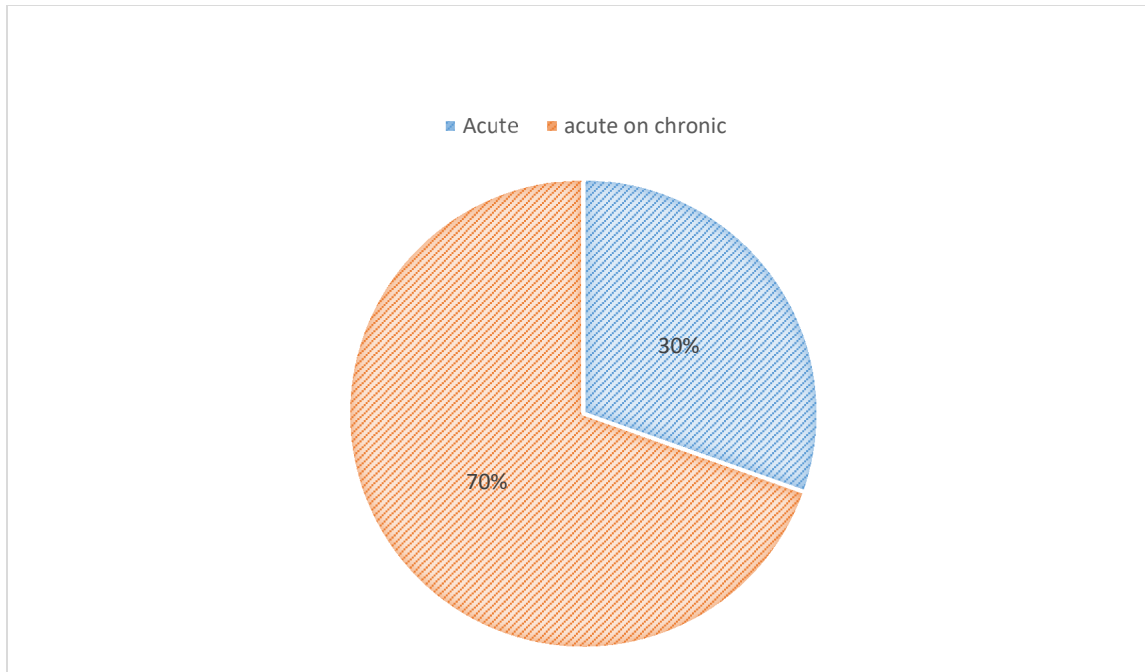


Figure 7: Mode of presentation of patients operated for perforated PUD at SPHMMC from January 9, 2013 to February 7, 2018

Table 3: Postoperative complication after omental patch for patients operated for perforated PUD at SPHMMC from January 9, 2013 to February 7, 2018

Complication	Frequency	Percent
Deep and superficial SSI	5	10.9
Leak	2	4.3
No	37	80.4
Not related to surgery	2	4.3
Total	46	100

Table 4: Outcome of the patients operated for perforated PUD at SPHMMC from January 9, 2013 to February 7, 2018

Outcome	Frequency	Percent
Discharged improved	40	87
Dead	2	4.3
Unknown	4	8.7

Total	46	100
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Table 5: Proportion of patients who were given eradication therapy after omental patch at SPHMMC from January 9, 2013 to February 7, 2018

Eradication	Frequency	Percent
Yes	26	56.5
No	9	19.6
Unknown	11	23.9
Total	46	100

Discussion

H.pylori infection play an important role in the causation of PUD³. Although, about 50% of world population is infected with H.pylori majority of them are non-symptomatic and suffer no sequel. Incidence and prevalence of uncomplicated peptic ulcer (PU) disease have decreased in recent years, most probably because of the identification and availability of treatment for Helicobacter pylori infection and wide usage of Protein pump inhibitors. Perforation occurs in 2- 10% of PU patients and account for more than 70% of deaths associated with PUD.

In the most of studies which were conducted in the different part of the world, majority of patients diagnosed with perforated PU were male patients. Gajendra et al, Out of 50 cases 35 (70%) were males and 15 (30%) were females with mean age 45.8 ± 10.76^3 . Jurg Metzger et al, also reported 29 (62%) male patients with perforated PUD out of 47 patients, their mean age was 64 years (range 27-91 year)². Asad Allah et al. and Hanak et al., also had reported higher proportion of male patients with perforated PUD^(4, 6). The finding of our study was almost similar with above finding, out of 46 patients with perforated PUD, 39 (84.8%) were male while only 7 (15.2%) were female and their mean age was 34.11 years (Range 17-74 years).

A number of factors have been mentioned as a risk factors for PUD, one of them is H.pylori. Association of H.pylori infection with peptic ulcer disease became well established fact, however; data regarding association between perforated PUD and H.pylori infection are conflicting; Indeed, H. pylori infection rates range from 0 to 92%². This variation can be due to the different population group studied in the past³. Taking NSAIDs and Aspirin are associated with PUD; Asad Allah et al., out of 85 patients with perforated PUD only 11(12.94 %) patients had history of NSAIDs intake⁴. Unlike other studies, Binn John, et al, there was no significant association between the incidence of H. pylori infection in peptic ulcers with smoking and NSAIDS intake⁷. In our study, there was no documentation of risk factors in majority of patients and therefore, it was impossible to determine association.

Some of the widely used diagnostic tests are serology, urea breath test and biopsy (culture, histopathology and biopsy urease test). Gajendra et al. ⁽³⁾, 50(100%) of patients was found to be positive serologically for HPI; however, only 70% was found to be positive by histopathology. Sensitivity and specificity of serologic assay varies from 52-94% and 60-97% respectively. On the other hand biopsy based methods have a low sensitivity but high specificity. In study done by Jurg et al. ⁽²⁾, out of 47 patients 73.3% was found to be positive for H.pylori infection by urea breath test. In our study only stool antigen and serology test used to determine H.pylori status of the patient.

Patients with Perforated peptic ulcer usually presents as an acute abdomen. The patient can often give the exact time of onset of the excruciating abdominal pain. Young Joo Yang et al¹⁵, majority of patients (92.2%) complained abdominal pain and 16(4%) patients experienced melena or hematemesis. Study in Nigeria, the common presenting symptoms were severe epigastric pain, vomiting and abdominal distention in 36 (100%), 22 (66.7%), and 10 (27.8%) patients respectively¹⁷. Our study showed almost similar results to above studies; 93.5% of patients had abdominal pain, 82.6% had vomiting, 13% had abdominal distention and almost all had peritonitis at the time of presentation.

Data regarding association between perforated PUD and H.pylori infection are conflicting; Indeed, H. pylori infection rates range from 0 to 92%². Gajendra et al. (3), 50(100%) of patients was found to be positive serologically for HPI. Study by, Agha Ahmed Hussain et al, they had 75 cases of perforated PUD and all were positive for H.pylori by serologic test; however histopathology of biopsy yields H.pylori in 50(66.6%) cases. In our study infection rate was 41.3

%. This was comparable to John B et al. (46.9%)⁷ and Young Joo Yang et al¹⁵ (44.8%). Although treatment of patients with history of chronic dyspepsia should be individualized, a cost effective initial approach is to test for H.pylori and treat the infection if the test is positive. If H.pylori test is negative, empiric therapy with acid suppressant or prokinetic agent recommended.

Conclusion and Recommendation

All patients with perforated peptic ulcer should be treated by simple closure of the perforation and with therapy aimed at healing of the ulcer and eradicating H.pylori infection. This prevent or at least decrease ulcer recurrence and reperforation in patient with H.pylori associated perforated ulcers after simple closure. Treatment of patients with history of chronic dyspepsia should be individualized ; since prevalence of H.pylori (in this study) is 41.3% , a cost effective

initial approach is to test for H.pylori and treat the infection if the test is positive. If H.pylori test is negative, empiric therapy with acid suppressant or prokinetic agent recommended.

Annexes

Annex I: Data Collecting Format

SPHMMC SCHOOL OF MEDICINE; DEPARTMENT OF SURGERY

- Data collection format on the frequency of H.pylori in perforated PUD at SPHMMC

1. SOCIO-DEMOGRAPHIC CATEGORY

- MRN : _____
- Age (in years) : _____
- Sex : male: _____ Female : _____
- Region :
 1. Amhara
 2. Oromia
 3. Tigray
 4. SNNPRS
 5. Others
- Religion :
 1. Orthodox
 2. Muslim
 3. Protestant
 4. Others
- Marital status
 1. Single
 2. Married
 3. Divorced
 4. Widow
- Occupation : _____

2. RISK AND PREVENTIVE FACTORS CATOGORY

- a. Smoking habit: Yes _____ ; No _____
- b. Alcohol drinking Habit : Yes _____ ; No _____
- c. Chat chewing habit : Yes _____ ; No _____
- d. Hx of use of NSAIDs : Yes _____ ; No _____
- e. Hx of use of PPIs : Yes _____ ; No _____
- f. Hx of eradication therapy within the last 6 months : Yes ____ ; No ____
- g. History of eradication after Surgery
- h. Blood group : _____
- i. Others : _____

3. DURATION OF SYMPTOMS CATEGORY (dyspepsia)

- a. Acute
- b. Chronic
- c. Acute on the top of chronic
- d. Duration at presentation : _____

4. DIAGNOSTIC or HELICOBACTER PYLORI STATUS CATEGORY

- 4.1 Stool antigen : Positive _____ ; Negative _____
4.2 Serologic test : Positive _____ ; Negative _____
4.3 Histopathology test : Positive _____ ; Negative _____
4.4 Not known : _____

5. COMORBID CONDITIONS RELATED CATEGORY

- a. Diabetes mellitus : Yes _____ ; No _____
b. Hypertension : Yes _____ ; No _____
c. Bronchial asthma : Yes _____ ; No _____
d. Heart failure : Yes _____ ; No _____
e. HIV-AIDS status positive : Yes _____ (CD4 count _____) ; No _____
f. Others _____

6. SURGERY RELATED CATEGORY

- a. Site of perforation _____
b. Type of surgery _____
c. Duration of surgery _____
d. Pre-op stay (in day) _____
e. Post-op stay (in day) _____
f. Length of Hospital stay _____
g. Post-op complication _____
h. Outcome : Discharged improved _____ ; Dead _____

7. Presenting Symptoms and signs category:

- a. Nausea / Vomiting / Epigastric pain / abdominal Pain/anorexia /
b. Shock / peritonitis / abdominal distention/

References

1. Kumar, Abbas et al. Robbins and Cotran Pathologic Basis of Disease, 8th ed.
2. Jürg Metzgera , Stephan Stygera , Cornel Sieber et al. Prevalence of Helicobacter pylori infection in peptic ulcer perforations; SWISS MED WKLY 2001;131:99–103
3. Gajendra Saxena , Rambabu Meena , Ruchi Saxena ; Prevalence of Helicobacter Pylori Infection in Patients of Perforated Peptic Ulcer ; JMSCR Vol | 05 | Issue | 04 | Page 21163-21168 | April 2017
4. Javier P. et al, Helicobacter pylori infection and perforated peptic ulcer prevalence of the infection and role of antibiotics , Blackwell Publishing Ltd, Helicobacter, 2003 ,8,159-167

5. Schwartz et al., Schwartz's Principle of Surgery 10th ed., page 1054.
6. Hakan Güze , Şahin Kahramanca , Duray Şeker , Gülay Özgehan , Peptic ulcer complications requiring surgery: What has changed in the last 50 years in Turkey ; Turk J Gastroenterol 2014; 25: 152-5
7. John B et al. , Prevalence of Helicobacter pylori in peptic ulcer perforation ; Int Surg J. 2017 Oct;4(10):3350-3353
8. Centers for Disease Control and Prevention, fact sheets for health care providers, updated July 1998.
9. Di Saverio et al. Diagnosis and treatment of perforated or bleeding peptic ulcers: 2013 WSES position paper World Journal of Emergency Surgery 2014, 9:45
10. D.S. Canoy , A.R. Hart' , C.J. Todd ; Epidemiology of duodenal ulcer perforation: a study on hospital admissions in Norfolk, United Kingdom ; ALIMENTARY TRACT DIGEST LIVER 01s 2002;34:322-7
11. George A. Sarosi, Jr., M.D.* , Kshama R. Jaiswal,et al. Surgical therapy of peptic ulcers in the 21st century: more common than you think ; the American Journal of Surgery 190(2005) 775-779
12. Chung-Shun Wong, Chee-Fah Chi , Hung-Chia Lee et al ; Eradication of Helicobacter pylori for prevention of ulcer recurrence after simple closure of perforated peptic ulcer: a meta-analysis of randomized controlled trials, JSR (2012) 1-8
13. Lee et al., Absence of Helicobacter pylori is not protective against peptic ulcer bleeding in elderly on offending agents: lessons from an exceptionally low prevalence population.
14. Tho-Henrik Henriksen et al., Peptic ulcer disease in south Ethiopia is strongly associated with Helicobacter pylori , Transactions of the Royal Society of Tropical Medicine and Hygiene (1999) 93 ,171-173
15. Young Joo Yang et al., clinical characteristics of peptic ulcer perforation in Korea, WJG 2017 April 14, 23(14): 2566-2574.
16. Nojkov B et al, PUD, dieulafoy's lesion , and MWS in alcoholic hepatitis and cirrhosis , WJG , 2016 January 7, 22(1) : 446-466
17. Dodiya-manuel a, wichendu pn, enebeli vc ; presentation and management of perforated peptic ulcer disease in a tertiary centre in south nigeria; journal of the west african college of surgeons volume 5 number 3, july - september 2015
18. Agha Ahmed Hussain et al. Prevalence of Helicobacter Pylori Infection in Patients with Perforated Peptic Ulcer; Prevalence of Helicobacter Pylori Infection in Patients with Perforated Peptic Ulcer ; JLUMHS SEPTEMBER-DECEMBER 2012; Vol 11: No. 03
19. Thor-Henrik Henriksen et al., Peptic Ulcer disease in South-Ethiopia is strongly associated with Helicobacter, Transactions of the Royal society of Tropical Medicine and Hygiene (1999)93,171-173.
20. Ersumo et al., Complicated Peptic ulcer disease , Ethiop MedJ.2004 Apr; 42(2):87-95