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The Characteristics of *Helicobacter pylori* infection and Clinical Outcomes of Patient with Upper Gastrointestinal Bleeding Admitted at Hospital Universiti Sains Malaysia

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Abstract: Upper gastrointestinal bleeding (UGIB) remains one of the most common clinical life threatening emergencies which are associated with a high morbidity and mortality. The main aim of this study was to determine the cause of *Helicobacter pylori* (*H. pylori*) infection and the use of non-steroidal anti-inflammatory drugs (NSAID) in upper gastrointestinal bleeding patients**.** A retrospective record review study was conducted among UGIB confirmed patients from January 2009 and December 2012 at Hospital Universiti Sains Malaysia. All patients who were admitted in hospital were recruited. Data collection included age, gender, *Helicobacter pylori* positivity, associated symptoms and Endoscopic findings. There were 46 patients with a mean age of 62 years. *H. pylori* was detected only in 2 (4.3%) both in Male among UGIB patients by Campylobacter-like organism (CLO) test. The prevalence of UGIB was higher in men than women 27(58.7%). The most common cause of UGIB was peptic ulcer (56.5%) and especially high amongst male patients (59.2%).The second common cause of UGIB was gastritis (19.6%). The majority of the patients are NSAID users 25 (54.3%). In conclusion, Peptic ulcer disease is the leading cause of UGIB and mainly common among males and *H. pylori* infection in upper gastrointestinal bleeding patients was low.

Key words: *Helicobacter pylori* · Campylobacter-Like Organism Test · Gastritis · Peptic Ulcer · Upper Gastrointestinal Bleeding

INTRODUCTION

Upper gastrointestinal bleeding (UGIB) is a common medical emergency that requires hospitalization leading to higher patient morbidity and medical care [1]. The overall mortality rate associated with UGIB is nearly 10-15% [2]. The incidence rates of UGIB reveal a large geographic variation ranging from 100 to 150 cases per 100 000 population, with regular reports of higher incidences among men and elderly people [3, 4].

The most common cause of UGIB is Peptic ulcer bleeding [PUB], accounting for 31%-67% of all cases, followed by erosive disease, variceal bleeding, oesophagitis, malignancies and Mallory-Weis tears

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[5]. In PUB patients, bleeding from duodenal ulcers is slightly more frequent than from gastric ulcers [6].

A study done in Malaysia among 128 UGIB patients found that Peptic ulcer is the main cause of UGIB [7]. *H. pylori* infection and Non-steroidal anti-inflammatory drugs (NSAID) use are independent risk factors for UGIB, especially PUB [8].

Helicobacter pylori (*H. pylori*), a Gram-negative microaerophylic bacterium, is associated with gastrointestinal diseases such as chronic gastritis, gastric and duodenal ulcers and gastric cancer [9-11]. *H. pylori* infection can be diagnosed by invasive techniques requiring endoscopy and biopsy (histological examination, culture, Polymerase chain reaction (PCR) and rapid urease test) and by non-invasive tests (serology, urea breath test, detection of *H. pylori* antigen in stool specimen) [12, 13]. The prevalence of *H. pylori* infection in UGIB patients varies between 24.4% (Serbia) to 92.4% (Spain) [14, 15].

UGIB has high morbidity and mortality rate worldwide and to the best of our knowledge only one study addressed these issues in Malaysia [7] However, it did not study the contribution of *H. pylori* to the morbidity and mortality rate of UGIB in the local population. Therefore, the aim of this study is to find out the causes of UGIB and incidence of *H. pylori*, use of NSAID in upper gastrointestinal patients.

MATERIALS AND METHODS

This retrospective study was conducted at Hospital Universiti Sains Malaysia. The study involved 46 patients who were hospitalized for UGIB with clinical complaints, black tarry stool (melena),coffee-ground vomiting or hematemesis and who underwent endoscopy between January 2009 and December 2012. Cases with UGIB were identified from the records department for the period under study. Case files were then individually analysed to collect data according to the scopes of the current hypothesis.

Collected demographics data (age, gender, race and place of residence), clinical characteristics, cause of UGIB (peptic ulcer, gastritis, duodenitis,varices, erosions and others), *H. pylori* infection and predisposing factors (NSAID). In addition, endoscopy reports were individually examined to ascertain endoscopic findings and confirm the underlying aetiology of bleeding. Patients who had received treatment with antibiotics or proton pump inhibitors were excluded in order to avoid false negative *H. pylori* results.

Helicobacter pylori presence in UGIB patients was confirmed by the invasive method Campylobacter-like organism (CLO) test.

This study was approved by the Human Research Ethics Committee, Universiti Sains Malaysia (USM), Kubang Kerian, Kelantan, Malaysia.

Statistical Analysis: Statistical Package for Social Science (SPSS 20) was used to perform the analysis.Numerical variables are given as means and standard deviation (SD) while Categorical variables were expressed as frequency and percentages. Categorical data were analysed by Chi- square test and Fisher's exact test. The results were considered significant if the P value was less than 0.05.

RESULTS

A total of 46 patients with diagnoses of UGIB were admitted to Hospital Universiti Sains Malaysia between the year 2009 and 2012 and comprised of 27 (58.7) males and 19 (41.3) females. The mean age of patients was 62.3% (range 12 to 83 years) (Table 1). Our study shows that the incidence of UGIB is more common in males than in females.

The ethnic distribution were 41 (89.1%) Malay, 4 (8.7%) Chinese and 1(2.2%) Indian (Table 1). Malay represents the highest ethnic group in this study, probably because they are the highest inhabitant of this state (95%).

The most common presenting complaints were melena (22) and epigastric pain (16) followed by haemetemesis and coffee ground (Table 2). Most of the patients had more than one symptom.

The leading causes of upper gastrointestinal bleeding were Peptic ulcer 26 (56.5%), gastritis 9 (19.6%) and duodenitis 7 (15.2%). Other less common causes included gastric erosion, gastric polyp and oesophageal varices (Table 3).

Peptic ulcers were the most common cause of UGIB 26 (56.5%) and males being with highest percentage 16 (59.2%) as compared with females 10 (52.6%).

Helicobacter pylori infection was found in 2(4.3%) of upper gastrointestinal patients by Campylobacter-like organism (CLO) test (Table 1).

Table 1: Demographic characteristics of patient with upper gastrointestinal bleeding at Hospital Universiti Sains Malaysia n= (46)

Age (years; mean±SD)	62.37±17.86
Gender	
Male	27(58.7%)
Female	19(41.3%)
Race	
Malay	41(89.1%)
Chinese	4(8.7%)
Indian	1(2.2%)
H. pylori infection	2(4.3%)
Male	2(7.4%)
Female	0(0.0%)
Drug	
NSAID	25(54.3%)

NSAID: Non-steroidal anti-inflammatory drugs.

Table 2: Clinical characteristics of patient with upper gastrointestinal bleeding at Hospital Universiti Sains Malaysia n = (46)

Symptoms *	No
Melena	22
Epigastric pain	16
Hematemesis	9
Coffee ground	6
Vomiting	2
Abdominal pain	1
Lack of appetite	1

*All patients had one or more complaint;

Table 3: Distribution of upper gastrointestinal bleeding by cause in patients admitted to Hospital Universiti Sains Malaysia n= (46)

	Male		Female		Total	
Cause	Number of cases	%	Number of cases	%	Number of cases	%
Peptic ulcer	16	61.5	10	38.5	26	56.5
Gastritis	6	22.2	3	15.8	9	19.6
Duodenitis	4	14.8	3	15.8	7	15.2
Gastric erosion	0	0.0	2	10.5	2	4.3
Oesophageal varices	1	3.7	0	0.0	1	2.2
Gastric polyp	0	0.0	1	5.3	1	2.2

Most of the patients occasionally consumed NSAIDs, particularly for a fever or moderate pain. In the present study population, the majority of the patients are NSAID users 25 (54.3%) (Table1).

DISCUSSION

In the present study, there were more males infected with UGIB as compared with females in similar to other studies in which there was a distinct male preponderance [16, 17].

Upper gastrointestinal bleeding tends to occur mostly at an older age. The mean age of 62.3 years in our study is slightly younger than other studies. In a study in Italy and Canada the mean age of patients hospitalized for UGIB was 68 and 66 years respectively [17, 18]. While a recent study in Libya reported lower mean age of 51.75 years [19].

The most common cause of upper gastrointestinal bleeding was Peptic ulcer 26 (56.5%) of all the cases. This finding is in agreement with studies done in Libya [19], Iran [20] and Turkey [4]. Other causes of UGIB that are found in this study are gastritis, duodenitis, gastric erosion, gastric polyp and oesophageal varices. These findings are also similar with others [16, 19]. This study indicates that peptic ulcer disease and gastritis are more common in male than female.

Helicobacter pylori infection in UGIB patients concerned in this study was extremely low 4.3%, probably being the lowest reported worldwide. This is very low compared to other studies which reported higher prevalence in Italy 47.94% [21], Spain 92.4% [15] and Serbia 24.4% [14].

CLO test has been used in the diagnosis of *H. Pylori* in dyspeptic and UGIB patients. Study done by said *et al* found the sensitivity and specificity of CLO test in dyspeptic patients as 99.8% and 96.4% respectively [22]. CLO test has also been used for the diagnosis of *H. Pylori* in UGIB patients [23].

This is not surprising as a study of *H. pylori* prevalence in Malaysia have shown that ethnic Malays have a remarkably low prevalence of *H. pylori* infection [24]. Uyub *et al* later reported that even within Malays there is difference in the prevalence, their study showed that there is low prevalence of *H. pylori* among the Malays in Kelantan [25]. This findings was later validated by Raj *et al*. showing the lowest *H. pylori* prevalence reported in the world (7%) among the the Malays in Kelantan [26]. This low prevalence of *H. Pylori* could be due to a combination of genetic, host and environmental factors among the Malays in Kelantan. This may explain why the rate is also low among the upper gastrointestinal patients in our study.

NSAIDs are major causes of upper gastrointestinal bleeding worldwide with an an increasing mortality rate among users with UGI bleeding [27]. Peptic ulcers are encountered in 15-30% of NSAIDs users and 3-4.5% of NSAIDs users annually develop clinically upper gastrointestinal disease [28]. In the present study 54.3% are NSAID users. This finding is in agreement with other studies in Greece 42.7% [29] and Iran 75% [20], but different from a study in Libya which reported a lower rate 9.7% [19].

As this study is a single-centre research where one ethnic group is predominant, our result cannot be generalized. Furthermore, as this study is retrospective, some data are not well documented equally for all patients and this has hindered our study as we were not able to include all the risk factors and co-morbid conditions. Despite the limitations, the results of this study are important as it outlines the characteristics of patients with upper gastrointestinal bleeding for the first time in this region.

CONCLUSIONS

Peptic ulcer disease remains the primary cause of upper gastrointestinal bleeding and commonly in males. The prevalence of *H. pylori* infection is low in upper gastrointestinal patients.

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