

The Characteristics and Risk Factors of Patients with Upper Gastrointestinal Bleeding undergoing Endoscopy in 2019 and 2020 at Dr. Doris Sylvanis General Regional Hospital

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ABSTRACT

Background: Upper Gastrointestinal Bleeding (UGIB) occurs in the lumen from the proximal of the Treitz ligament. It is divided into variceal and non-variceal bleeding. The risk factors include age, smoking, alcohol, portal hypertension, hepatitis, and medications. UGIB manifests as hematemesis and melena. This study aims to determine characteristics, and relationship of risk factors with UGIB in patients undergoing endoscopy in Dr. Doris Sylvanus General Regional Hospital Palangka Raya in 2019–2020.

Method: An analytical observational study with a cross-sectional design using the patient's medical record data who had undergone endoscopy at Dr. Doris Sylvanus Hospital Palangka Raya with total sampling. Subjects were divided into the group with variceal and non-variceal bleeding then analyzed the relationship of risk factors using the contingency coefficient test.

Results: The results showed that there were 72 patients with UGIB, including 44 males (61.1%), age group was < 60 years old in 47 patients (65.28%). Peptic ulcer was the most common etiology, occurring in 43 patients (59.72%). The highest clinical manifestations were melena in 47 patients (65.28%) and smoking in 32 patients (44.4%). The results of the bivariate analysis showed a significant relationship between upper GI bleeding and risk factors for certain drugs, portal hypertension, and hepatitis with a p-value of 0.013, 0.000, and 0.002.

Conclusion: In this study, was the most common is a non-variceal bleeding, in men, age group <60 years, with melena and there was a significant relationship between UGIB with certain drugs, portal hypertension, and hepatitis.

Keywords: risk factors, upper gastrointestinal bleeding, endoscopy

ABSTRAK

Latar belakang: Perdarahan saluran cerna bagian atas (SCBA) adalah perdarahan lumen saluran cerna pada proksimal ligamentum Treitz. Berdasarkan etiologinya dibagi menjadi perdarahan varises dan non-varises. Faktor risiko meliputi usia, merokok, alkohol, hipertensi portal, hepatitis, dan obat-obatan tertentu. Bermanifestasi sebagai hematemesis dan melena. Artikel ini bertujuan untuk mengetahui prevalensi, karakteristik, dan hubungan faktor risiko dengan kejadian perdarahan SCBA pada pasien yang menjalani endoskopi di RSUD Dr. Doris Sylvanus Palangka Raya pada tahun 2019–2020.

Metode: Penelitian observasional analitik dengan desain potong lintang. Penelitian menggunakan data rekam medis pasien yang telah menjalani endoskopi di RSUD Dr Doris Sylvanus Palangka Raya menggunakan total sampling. Subjek dibagi menjadi kelompok yang mengalami perdarahan varises dan non-varises lalu menganalisis hubungan faktor risiko dengan menggunakan uji koefisien kontingensi C.

Hasil: Hasil penelitian didapatkan 72 pasien perdarahan SCBA terdiri dari 44 pasien laki-laki (61,11%), kelompok usia tertinggi ada pada usia <60 tahun sebanyak 47 pasien (65,28%). Etiologi tersering ialah ulkus peptikum pada 43 pasien (59,72%). Dengan 47 pasien mengalami melena (65,28%). Faktor risiko tertinggi ialah merokok sebanyak 32 pasien (44,4%). Hasil analisis bivariat menunjukkan terdapat hubungan yang signifikan antara perdarahan SCBA dengan faktor risiko obat-obatan tertentu dengan $p = 0,013$, hipertensi portal dengan $p = 0,000$, dan hepatitis dengan $p = 0,002$.

Simpulan: Pada penelitian ini perdarahan SCBA tersering pada perdarahan non-varises, jenis kelamin laki-laki, kelompok usia <60 tahun, manifestasi klinis melena dan terdapat hubungan yang signifikan antara perdarahan SCBA dengan obat-obatan tertentu, hipertensi portal, dan hepatitis.

Kata kunci: faktor risiko, perdarahan saluran cerna bagian atas, endoskopi

INTRODUCTION

Upper gastrointestinal bleeding is an emergency problem in the field of gastroenterology with high mortality and morbidity rate.^{1,2} Furthermore, it is a common global problem with an annual incidence of 80–150 per 100,000 population and an estimated mortality rate of 2–15%.³ In Indonesia, there is an annual incidence of 48–160 cases per 100,000 population.¹

Upper gastrointestinal bleeding is divided into variceal and non-variceal bleeding based on the etiology.¹ Meanwhile, the most common causes in Indonesia are non-variceal bleeding like erosive gastritis and peptic ulcer.⁴ The risk factors for upper gastrointestinal bleeding include age, smoking, alcohol intake, history of peptic ulcer disease, portal hypertension, hepatitis, traditional herbal medicine, and drugs such as non-steroidal anti-inflammatory drugs (NSAIDs), antiplatelets, anticoagulants, and selective serotonin reuptake inhibitors (SSRIs).^{5,6} Upper gastrointestinal bleeding may manifest as hematemesis, which can be bright red emesis or coffee ground emesis, and melena.³ Additionally, an endoscopic examination is required to determine the cause of this bleeding. This is due to the lack of quality epidemiological data to track trends in the diagnosis, management, and outcome of global cases. Simultaneously, there is a critical assessment of interventions and new treatment processes because of the limited basic data for comparison.^{7–9}

In Indonesia, the data are limited to characteristics and prevalence, while the relationship with the risk factors has not been studied. Therefore, there are no data on the characteristics of risk factors based on each

province and region, including Central Kalimantan. This study was conducted at Dr. Doris Sylvanus General Regional Hospital Palangka Raya because it has an endoscope and is a referral from other health facilities if there is suspicion of upper gastrointestinal bleeding. Therefore, this study aims to determine the prevalence, characteristics, and relationship between risk factors and the incidence of upper gastrointestinal bleeding in Central Kalimantan. About 72 samples were obtained in the preliminary survey and the medical record data was from January 2019–March 2020 due to the COVID-19 pandemic, causing the endoscopy to halt.

METHOD

An analytic observational study is conducted with a cross-sectional design or a cross-sectional study with a retrospective approach. The data needed were collected from the endoscopic patients' medical record sheets using the study instrument. These data were obtained from 72 patients with upper gastrointestinal bleeding undergoing endoscopy using the total sampling technique in Dr. Doris Sylvanus General Regional Hospital Palangka Raya in 2019–2020. The subjects of this study were patient who were diagnosed with Upper GI Bleeding by endoscopy, who has complete medical record during the period January 2019 to December 2020. Data were processed using statistical package for social sciences (version 22: Armonk; NY: IBM Corp). Data regarding patient's characteristic, endoscopic finding, and upper GI bleeding factors were collected. Alcohol was defined as regular or

irregular use more than 10 years. Smoking was defined as regular smoking 12 cigarette daily used more than 1 month. Consuming drugs was defined as NSAIDs use more than 1 month or antiplatelets/anticoagulants/SSRI use more than 1 week. Portal hypertension was proved by esophageal varices endoscopy finding. Hepatitis was proved if HBsAg test or anti-HCV test positive. The comparison test for the variable was using the contingency coefficient test. *P* value lower than 0.05 was considered significant

RESULTS

The demographic data of the patients was obtained from the medical records of patients from the endoscopy unit at the Central Surgery Facility of Dr. Doris Sylvanus, with 72 samples for the study. The demographic data can be seen in Table 1.

Table 1 showed that in the study sample, 44 were male patients which is 61.11%, with non-variceal and variceal bleeding in 38 and 6 patients, accounting for 52.77% and 8.33%, respectively. Meanwhile, there were 28 female or 38.39% patients, with non-variceal and variceal bleeding in 25 and 3 patients, accounting for 34.72% and 4.16%, respectively. The upper gastrointestinal bleeding was dominated by those under 60 years old, amounting to 47 patients or 65.28% divided into 41 patients with non-variceal bleeding and 6 patients with variceal bleeding, which is 32.42% and 8.33%, respectively. About 25 patients were above 60 years, making up 34.72%, with non-variceal and variceal bleeding in 22 and 3 patients, accounting for 30.55% and 4.16%, respectively. This condition is commonly experienced by 57 non-civil servants, which is 79.17%, with non-variceal and variceal bleeding in 50 and 7 patients, constituting 69.44% and 9.72%,

Table 1. Demographic data of upper gastrointestinal bleeding patients undergoing endoscopy at Dr. Doris Sylvanus General Regional Hospital 2019–2020

Characteristic	n (%)	Upper gastrointestinal bleeding (n = 72)	
		Variceal (n = 9)	Non-variceal (n = 63)
Gender, n (%)			
Male	44 (61.11%)	6 (8.33%)	38 (52.77%)
Female	28 (38.39%)	3 (4.16%)	25 (34.72%)
Age, mean (SD)		54.33 (9.09)	53.14 (12.84)
Age, n (%)			
< 60 years	47 (65.28%)	6 (8.33%)	41 (32.42%)
≥ 60 years	25 (34.72%)	3 (4.16%)	22 (30.55%)
Occupation, n (%)			
Civil servant	15 (20.83%)	2 (2.77%)	13 (18.05%)
Non-civil workers	57 (79.17%)	7 (9.72%)	50 (69.44%)
Alcohol, n (%)			
Yes	17 (23.61%)	4 (5.55%)	13 (18.05%)
No	55 (76.39%)	5 (6.94%)	50 (69.44%)
Smoking, n (%)			
Yes	32 (44.44%)	4 (5.55%)	28 (38.88%)
No	40 (55.56%)	5 (6.94%)	35 (48.61%)
Consuming drugs (NSAIDs/antiplatelets/anticoagulants/SSRIs), n (%)			
Yes	27 (37.50%)	-	27 (37.5%)
No	45 (62.50%)	9 (12.5%)	36 (50%)
Portal hypertension, n (%)			
Yes	10 (13.89%)	9 (12.5%)	1 (1.38%)
No	62 (86.11%)	-	62 (86.1%)
Hepatitis, n (%)			
Yes	13 (18.06%)	5 (6.94%)	8 (11.11%)
No	59 (81.94%)	4 (5.55%)	55 (76.39%)

NSAIDs: non-steroidal anti-inflammatory drugs; SSRIs: selective serotonin reuptake inhibitors

respectively. A total of 15 civil servants, comprising of 20.83%, experienced upper gastrointestinal bleeding with non-variceal and variceal in 13 and 2 patients, equating 18.05% and 2.77%, respectively. The highest risk factor was smoking in 32 patients, constituting 44.44%, with non-variceal and variceal bleeding in 28 patients and 4 patients, accounting for 38.88% and 5.55%, respectively. Furthermore, the second is alcohol consumption in 17 patients, making up 23.61%, with non-variceal and variceal bleeding in 13 and 4 patients, comprising of 18.05% and 5.55%, respectively. About 27 patients, equating 37.5%, consumed drugs, including NSAIDs, antiplatelets, anticoagulants, and SSRIs, that triggered non-variceal bleeding. Portal hypertension occurred in 9 patients with variceal bleeding and 1 patient with non-variceal bleeding, totalling 12.5% and 1.38%, respectively. Meanwhile, hepatitis occurred in 7 and 6 patients with variceal and non-variceal bleeding, constituting 9.72% and 8.33%.

Characteristic Distribution of Patients with Upper gastrointestinal Bleeding Based on Etiology

The etiology of the bleeding was observed in 72 patients. Based on the medical record data, the characteristics of the patients was divided into variceal etiology and non-variceal etiology. Non-variceal etiology was observed in 63 patients include peptic ulcer, erosive gastritis, duodenitis, esophagitis, and malignancy. Variceal etiology was observe in 9 patients include esophageal varices grade III-IV with or without non-variceal etiology.

Based on Figure 1 and Figure 2, the etiology of the 72 patients had various combinations of diagnoses. In this study, there were up to four combinations of diagnoses in one case of upper gastrointestinal bleeding. The combinations consisted of endoscopic results such as peptic ulcer, erosive gastritis, duodenitis, esophagitis, esophageal varices, portal hypertensive gastropathy, and malignancy. The most common diagnosis was peptic ulcer.

Variceal Etiology

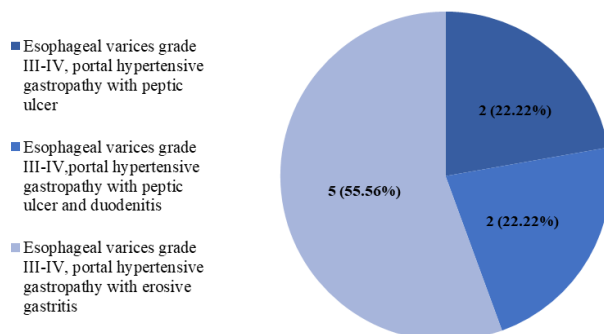


Figure 1. Distribution of variceal etiology

- Peptic ulcer
- Erosive gastritis
- Esophagitis
- Malignancy
- Peptic ulcer & erosive gastritis
- Peptic ulcer, erosive gastritis & esophagitis
- Peptic ulcer, erosive gastritis & duodenitis
- Erosive gastritis & esophagitis
- Peptic ulcer & duodenitis
- Peptic ulcer & esophagitis
- Peptic ulcer with esophagitis & duodenitis
- Peptic ulcer, erosive gastritis, esophageal varices grade I & portal hypertensive gastropathy
- Erosive gastritis & duodenitis
- Esophagitis, erosive gastritis & duodenitis
- Malignancy & esophagitis
- Malignancy & erosive gastritis

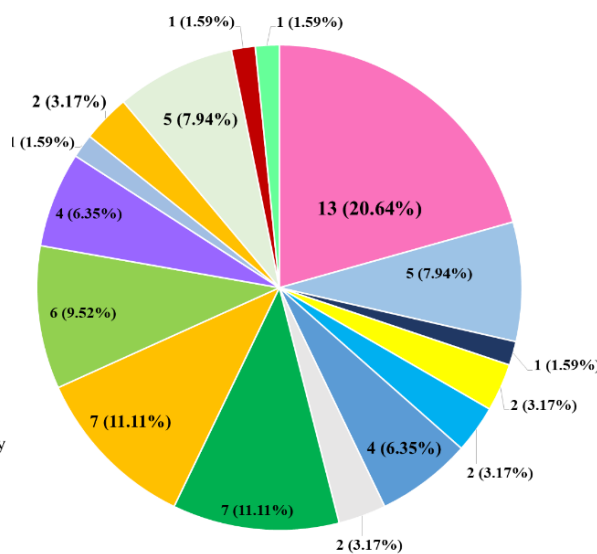


Figure 2. Distribution of non-variceal etiology

In this study peptic ulcer without combination occurred in 13 patients (20.64%) while peptic ulcer with other combinations occurred in 30 patients (42.86%), peptic ulcer occurred with a total of 43 patients diagnosed (59.72%), followed by erosive gastritis consisting of erosive gastritis without combination in 5 patients (7.94%) while with combination occurred in 28 patients (38.39%) so that it has a total of 33 patients diagnosed (45.83%), then esophagitis which occurred in 27 patients (37.5%) consisting of esophagitis without combination in 1 patient (1.59%) and esophagitis with combination that occurred in 26 patients (36.11%), followed by duodenitis combination which occurred in 26 patients (36.11%), in esophageal varices combination in 10 patients (13.88%), portal hypertensive gastropathy combination in 6 patients (8.33%), malignancy only occurred in 4 patients (5.55%) consisting of malignancy without combination in 2 patients and malignancy with combination in 2 other patients.

Distribution of Patients Characteristics with Upper gastrointestinal Bleeding Based on Clinical Manifestations

In this study, the characteristics of the patient's clinical manifestations that support their prognosis were observed and divided into hematemesis, melena, combination of hematemesis and melena.

According to Figure 3, melena is the most common clinical manifestation in 47 patients, accounting for 65.28%. About 4 and 21 patients had hematemesis, and a combination of hematemesis and melena, constituting 5.56% and 29.17%, respectively.

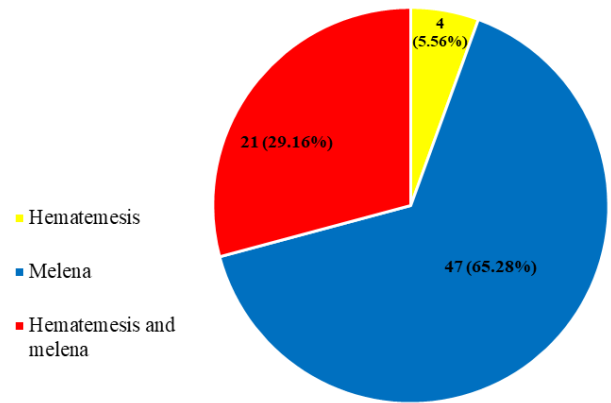


Figure 3. The characteristics based on clinical manifestations of patients with upper gastrointestinal bleeding undergoing endoscopy at Dr. Doris Sylvanus General Regional Hospital 2019–2020

Risk Factors and Characteristics Associated with Upper gastrointestinal Bleeding

The bivariate analysis in Table 4 showed that three factors are significantly associated with upper gastrointestinal bleeding, with a *p*-value less than 0.05. There was a significant relationship between upper gastrointestinal bleeding and risk factors for drugs, portal hypertension, and hepatitis with *p* = of 0.013, 0.000, and 0.002.

DISCUSSION

In this study, it was found that the prevalence of males suffering from upper gastrointestinal bleeding was the highest at 61.11%, while females accounted for only 38.39%. This is in line with previous research conducted by Prof. Dr. R. D Kandou Manado in 2016, where the numbers obtained were not much different, with 63% for males and 37% for females.¹⁰ The

Table 4. Factors and characteristics associated with bleeding upper gastrointestinal tract at Dr. Doris Sylvanus General Regional Hospital 2019–2020

No	Risk factor	Category	Variceal n (%)	Non-variceal n (%)	<i>p</i>
1	Age	< 60 years	6 (8.33%)	41 (32.42%)	0.925
		≥ 60 years	3 (4.16%)	22 (30.55%)	
2	Gender	Male	6 (8.33%)	37 (51.38%)	0.715
		Female	3 (4.16%)	26 (36.1%)	
3	Occupation	Civil servant	2 (2.77%)	13 (18.05%)	1.0
		Non-civil workers	7 (9.72%)	50 (69.44%)	
4	Alcohol	Yes	4 (5.55%)	13 (18.05%)	0.116
		No	5 (6.94%)	50 (69.44%)	
5	Smoking	Yes	4 (5.55%)	28 (38.88%)	1.0
		No	5 (6.94%)	35 (48.61%)	
6	Consuming drugs	Yes	0 (0%)	27 (37.5%)	0.013*
		No	9 (12.5%)	36 (50%)	
7	Portal hypertension	Yes	9 (12.5%)	1 (1.38%)	0.000*
		No	0 (0%)	62 (86.1%)	
8	Hepatitis	Yes	7 (9.72%)	6 (8.33%)	0.002*
		No	2 (2.77%)	57 (79.16%)	

increased incidence in males is more likely to occur due to an increase in comorbidities in men. Mostly upper gastrointestinal bleeding patients did not die because of the bleeding itself, but because of other diseases that exist simultaneously, such as kidney failure, hypoalbuminemia, stroke, heart disease, chronic liver disease, pneumonia, and sepsis.¹¹ In addition, males also have a higher habit of smoking and drinking alcohol than females, increasing the risk of upper gastrointestinal bleeding.¹²

The results showed that those under 60 years suffered the most from upper gastrointestinal bleeding. However, this is inconsistent with the studies by Colin et al at Nottingham City Hospital in 2011, where the age group affected was over 65 years. This is similar to the report by McCloskey et al at the University of Glasgow Crosshouse Hospital UK in 2011, that causes due to non-variceal are found in those over 65 years.¹⁰ This difference is due to changes in lifestyle and high rates of *H. pylori* infection. In Indonesia, the lifestyle change required at this time is the high rate of smoking at a young age. Based on data from the Central Statistics Agency, the percentage of smoking in 2021 aged 15 years is 28.96%, while in Central Kalimantan it is 29.33%, higher than the national average. Based on Tobacco Control Support Center, beginner smokers aged 10–14 years increased by 140% from 9.6% to 23.1% during 2007–2018, while beginner smokers aged 15–19 years increased by 43% from 36.3% to 52.1%. Meanwhile, the smoking rate in the UK has decreased, as people who smoked in 2011 at the age of 16 years had a percentage of 23%, and it decreased in 2021 to 14.7%.¹³

In addition to research conducted in Indonesia, according to the National Health Insurance Service (NHIS) in South Korea from 2002–2013, young adults had at least two or more risk factors for upper gastrointestinal bleeding.¹⁴

H. pylori can cause upper gastrointestinal bleeding at a young age and it is a common bacteria infecting humans. Meanwhile, children with *H. pylori* are asymptomatic, making identification difficult and they often have infections that persist into adulthood.¹⁵

H. Pylori can be seen microscopically as a diffuse expansion of the superficial lamina propria by inflammatory infiltrates, mostly plasma cells, and often involving lymphoid and germinal centers. *H. Pylori* affects more than half the world's population, mostly asymptomatic patients or with mild dyspeptic symptoms but some present with abdominal pain with or without peptic ulcer disease.¹⁶

In children with persistent *H. pylori* colonization, the lesions on the gastric mucosa worsen. This colonization can result in various gastrointestinal disorders, including gastritis, duodenitis, gastric or duodenal ulcers, lymphoma in mucosal-associated lymphoid tissue (MALT), and gastric cancer for a lifetime. Therefore, it is important to treat persistent *H. pylori* colonization to prevent potential complications.¹³

A meta-analysis by Zabala-Torres et al stated that the seroprevalence rate for *H. pylori* is 33% of the world's population of asymptomatic children. This increases with the age, where it is 20% at the age less than 6 years, between 6–11 years 37%, and between 12–18 years 44%. In Indonesia, the study on the prevalence of *H. pylori* in children uses serological tests and is conducted on asymptomatic patients. Furthermore, the results of these studies are varied, and a study in Manado and West Java showed that the prevalence of *H. pylori* was 3.8% and 52%, respectively.¹³

There are challenges in job segregation in this study, in which a large variety of jobs is listed, hence, it is divided into civil servants and non-civil employees. The results of this study indicated that civil and non-civil servants are diagnosed with more non-variceal bleeding. This relationship has not been studied directly, but strain at work cause stressed-induced peptic ulcers. Therefore, stress increases gastric acid and triggers ulceration and it can also generate more alcohol consumption and smoking.¹⁷

In this study, the most common risk factors for patients with upper gastrointestinal bleeding in order were smoking, alcohol consumption, and certain drug use. The high rate of these risk factors is in line with research showing that smoking is associated with impaired gastric mucosa performance and is associated with *H. Pylori* infection, which can cause peptic ulcers.¹⁸ Cigarette smoke can cause damage to mucosal cells and reduce blood flow in the digestive mucosa, as well as interfere with mucosal immunity. Smoking is also an independent risk factor for various types of digestive tract cancer.¹⁹

The second highest risk factor in order is alcohol. Previous research has indicated that alcohol can contribute to almost a third of patients with upper gastrointestinal bleeding.²⁰ Based on experiment, ethanol has been shown to be "ulcerogenic", regardless of intraluminal gastric pH. Ethanol remains ulcerogenic even when given H2 receptor antisecretory antagonists. Alcohol increases the permeability of human gastric mucosa to hydrogen ions and increases the likelihood of upper gastrointestinal bleeding.²¹

Changes in lifestyle in society are seen in the high rates of smoking and alcohol risk factors, so the age of upper gastrointestinal bleeding patients can begin at a young age. However, the high rate of alcohol and smoking risk factors cannot yet be called the main risk factor, as the study did not know the duration of patients' smoking and alcohol consumption and no data was obtained on the prevalence of *H. Pylori*. NSAIDs risk factors can directly affect and cause upper gastrointestinal bleeding. NSAIDs irreversibly inhibit cyclooxygenase 1 associated with a decrease in protective mucosal prostaglandin levels that induce gastric and intestinal ulceration.¹⁰

Drug consumption, especially NSAIDs, can affect the stomach mucosa of patients, although NSAIDs and drugs that trigger upper gastrointestinal bleeding are more commonly consumed in old age, research has been conducted on the reported level of digestive tract bleeding in patients receiving NSAIDs ranging from 2.4% to 12%, the risk will be much higher if patients also consume alcohol.¹⁹ In addition to NSAIDs, a key risk factor in upper gastrointestinal bleeding is *H. Pylori*. Because *H. Pylori* can directly cause an inflammatory response with neutrophils, lymphocytes, plasma cells, and macrophages in the mucosal layer and cause degeneration and injury to epithelial cells.²² During *H. Pylori* infection, it can activate abnormal Th22 cells and correlate with Th17 cells that can damage tissue through immunopathological responses.²³ Despite this, in countries with a high prevalence of *H. Pylori* infection, the eradication rate is relatively low, which increases the risk of upper gastrointestinal bleeding.¹⁰

The results showed that 72 cases of patients with upper gastrointestinal bleeding from January 2019–December 2020 were obtained, with 63 non-variceal cases and 9 varicose veins. Furthermore, the bleeding is divided into variceal and non-variceal bleeding. Non-variceal bleeding include all causes except esophageal and gastric variceal such as erosive gastritis, peptic ulcer, esophageal ulcer, duodenal ulcer, congestive gastropathy, *Mallory-Weiss* syndrome, esophagitis, and malignancy.¹

Based on the etiology, non-variceal in this study were more numerous than variceal bleeding. The data collected by the American Society of Gastrointestinal Endoscopy showed that non-variceal are more common than variceal bleeding. In this study, peptic ulcer was the most common cause of non-variceal bleeding. This is in line with the government hospital in Ujung Pandang and Darmo Hospital Surabaya, where peptic

ulcers were the first cause of upper gastrointestinal bleeding.¹⁰

However, it differs from The Indonesian Society of Gastroenterology data which reported that 19.4% of patients undergoing endoscopy experienced non-variceal bleeding at the national consensus in Indonesia and 70% had ruptured variceal esophagus. This is in line with a study at the endoscopy center of Dr. Cipto Mangunkusumo Hospital in 2001–2005, where the most common cause was esophageal variceal, accounting for 33.4%. The results differ due to the increase in peptic ulcer cases resulting from the increasing proportion of the elderly and the improvement in chronic liver disease management, hence, the esophageal variceal rate decrease³

The clinical manifestations include hematemesis, melena, and hematochezia. Furthermore, the most common manifestation in this study was melena, which occurred in 69 patients, while hematemesis occurred in 27 patients. This result is in line with Kumar et al who reported more melena symptoms than hematemesis.²¹ Also, it is in line with the Tabanan Regional General Hospital in 2022, which showed that melena was more prevalent than hematemesis. The symptoms vary depending on the onset and the amount of bleeding. Consequently, if the bleeding lasts for a longer time, the blood mixes with stomach acid to form hematin which gives the stool a black color, hence, the symptoms of melena are more prominent. Meanwhile, if the bleeding occurs in a short time, the symptoms of hematemesis or vomiting of blood are more prominent.²³

The hypothesis test result of the relationship between age and gender on upper gastrointestinal bleeding obtained insignificant results. This is because age and gender are not risk factors that directly impact upper gastrointestinal bleeding. Age and gender only contribute to lifestyle (smoking and drinking more often) and the high rate of comorbidities, causing a higher rate of drug consumption.

The results of the bivariate test between job characteristics and upper gastrointestinal bleeding have insignificant test. The insignificance of these results is due to the job not being a risk factor for upper gastrointestinal bleeding. Jobs can trigger stress that can cause the onset of stressed-induced peptic ulcers. In this study, both civil servants and non-civil servants have the highest number of non-variceal bleeding, indicating that both categories have the same risk of upper gastrointestinal bleeding. Ulcers that arise from non-variceal bleeding can be induced by stress and can be erosive and ulcerative lesions in the stomach

and duodenum that occur as a response to mental and physical situations in adults and teenagers.²⁶

The pathogenesis of stressed-induced peptic ulcer is still unclear, but it is possible that it is caused by decreased blood flow in the digestive mucosa or it can also be caused by damage to the normal mucosal defense mechanism along with the effects of acid and pepsin that can damage the gastric and duodenal mucosa. Psychological stress increases the occurrence of peptic ulcers, by influencing patients' health behavior. Stress has a similar effect on ulcers associated with *H. pylori* infection or NSAID use.²⁶

The hypothesis test between smoking and alcohol showed an insignificant relationship. Although smoking and alcohol in this study have the highest number, both cannot be considered the main risk factor, because both risk factors cannot directly cause upper gastrointestinal bleeding. Smoking can cause impaired gastric mucosa performance, but if there are no other risk factors such as *H. Pylori*, upper gastrointestinal bleeding cannot occur.¹⁸ While the risk factor of alcohol only increases the likelihood of upper gastrointestinal bleeding, bleeding can occur if the alcohol drinker suffers from alcoholic liver disease induced by alcohol. Chronic liver disease will cause esophageal varices due to increased portal vein pressure.²⁷ Although alcohol is ulcerogenic, peptic ulcers that occur in most patients are only caused by two things: the role of *H. Pylori* and NSAID induction.²³ In this study, the majority of patients with upper gastrointestinal bleeding were non-smokers and non-drinkers, indicating that both risk factors did not directly contribute to upper gastrointestinal bleeding. It is necessary to conduct further research to identify the main risk factors that cause upper gastrointestinal bleeding.

The results of statistical tests showed a significant relationship between upper gastrointestinal bleeding and risk factors for drugs, portal hypertension, and hepatitis. The significant relationship in the risk factors for certain drugs is probably because the most common etiology is peptic ulcer. Certain drugs such as NSAIDs irreversibly inhibit cyclooxygenase 1 which decrease the levels of protective mucosal prostaglandins, hence inducing gastric and intestinal ulceration.¹⁴

A significant relationship between hepatitis and portal hypertension occurs because variceal and non-variceal patients experience hepatitis. Chronic hepatitis B and C damage the liver leading to cirrhosis, and

increase the pressure gradient of the portal venous system, hence, variceal ulcers occur which can cause upper gastrointestinal bleeding. Hypertension in the portal venous system is due to an increase in the pressure gradient, which is the difference in pressure between the portal vein and the inferior vena cava or hepatic vein. The normal gradient is 5 mmHg, and portal hypertension occurs when the pressure gradient increases to 6 mmHg. Meanwhile, variceal develop if the gradient increases > 12 mmHg.²⁶ Large esophageal variceal due to portal hypertension have a 25–35% bleeding risk and a 15–20% risk of death.²⁸ Non-variceal bleeding may occur in patients with hepatitis because taking drugs is a risk factor for upper gastrointestinal bleeding. This was based on a prospective study by Kirk et al in the American journal of digestive diseases to determine the frequency of peptic ulcers in different stages of chronic liver disease and the effect of corticosteroid treatment. Furthermore, in 163 patients with chronic liver disease undergoing upper gastrointestinal endoscopy, 24 patients had peptic ulcers, accounting for 14.7%.²⁹

The limitations in this study include some incomplete data like not listed age, gender, risk factors incomplete or involved and the *H. Pylori* test cannot be done due to limited examination tools. The absence of *H. Pylori* test could increase the bias considering that *H. Pylori* is one of the most common causes of upper gastrointestinal bleeding.

CONCLUSION

A total of 72 patients in this study had endoscopies due to upper gastrointestinal bleeding. Furthermore, the bleeding occurred in 44 men (61.11%), aged < 60 years in 47 patients (65.28%), and non-variceal bleeding was common in 63 patients. peptic ulcer in 43 patients (59.72%). The most common clinical manifestation was melena in 47 patients (65.28%). According to the statistical analysis, the risk factors causes upper gastrointestinal bleeding in patients undergoing endoscopy at Dr. Doris Sylvanus General Regional Hospital Palangka Raya in 2019–2020 were significant at drugs, portal hypertension, and hepatitis. For further clinical applications, there is still a need for other prospective studies in multiple endoscopy centers with *H. Pylori* in a larger population to reach higher clinical efficacy.

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