

# The Profile of Esophagogastroduodenoscopy for Elderly Patients at Kariadi Hospital Semarang

Agung Prasetyo, Didik Indiarso, Hery Djagat, Hirlan

Division of Gastroentero-hepatology, Department of Internal Medicine  
University of Diponegoro/Dr. Kariadi General Hospital, Semarang

## ABSTRACT

**Background:** The hospitalization and mortality rate for gastroduodenal ulcer in the elderly remain very high. It may be attributed to increase prescriptions for gastroduodenal damaging drugs, including the non-steroidal anti-inflammatory drugs (NSAIDs). The aim of this study was to determine the profile of elderly patients' characteristics who had undergone esophagogastroduodenoscopy (EGD) at Kariadi Hospital.

**Method:** A cross sectional study was conducted in elderly patients with non-variceal EGD at Kariadi Hospital, Semarang between Januari 2009 and December 2010. Analysis statistic was performed using chi-square test, with SPSS version 19.

**Results:** Among records for a total of 164 cases of elderly patients who had undergone EGD, 90 patients were enrolled in this study. There were 64 (71.1%) male patients and the most chief complaint was hematemesis (22.2%). The most common indication for EGD was upper gastrointestinal tract bleeding (55.6%). EGD results demonstrated that the most common finding was mild abnormalities (56.7%). Gastric ulcer was found in EGD results in 38.0% cases with upper gastrointestinal bleeding (PR = 5.5; 95% CI = 1.7-17.9; p = 0.002). Moreover, the gastric ulcer was also found in 42.3% among NSAIDs users (PR = 3.2; 95% CI = 1.2-8.6).

**Conclusion:** Upper gastrointestinal tract bleeding is the most common indication for EGD in elderly patients at Kariadi Hospital, Semarang. The most EGD image was only mild abnormalities followed by gastric ulcer. In the study, upper gastrointestinal bleeding is associated with high incidence of gastric ulcer, which also correlated with high incidence of NSAIDs utilization.

**Keywords:** elderly, esophagogastroduodenoscopy, co-morbidities

## ABSTRAK

**Latar belakang:** Tingkat rawat inap maupun kematian karena ulkus lambung dan duodenum pada pasien usia lanjut masih sangat tinggi. Hal tersebut dihubungkan dengan tingginya pemakaian obat yang merusak saluran cerna, termasuk obat anti-inflamasi non steroid (OAINS). Penelitian ini bertujuan untuk mengetahui profil karakteristik pasien usia lanjut yang menjalani pemeriksaan esofagogastroduodenoskopi (EGD) di Rumah Sakit Kariadi, Semarang.

**Metode:** Penelitian potong lintang dilakukan pada pasien usia lanjut non-varises yang menjalani pemeriksaan EGD di Rumah Sakit Kariadi Semarang pada Januari 2009 hingga Desember 2010. Analisis statistik menggunakan uji kai kuadrat dengan SPSS versi 19.

**Hasil:** Dari sejumlah 164 pasien usia lanjut yang menjalani pemeriksaan EGD, hanya 90 pasien yang dilakukan analisis lebih lanjut. Dimana sejumlah 64 (71,1%) pasien laki-laki dan keluhan utama yang sering ditemukan yaitu hematemesis (22,2%). Indikasi terbanyak dari hasil pemeriksaan EGD adalah perdarahan saluran cerna bagian atas (55,6%). Gambaran EGD terbanyak adalah kelainan ringan (56,7%). Pada indikasi dengan perdarahan saluran cerna bagian atas didapat ulkus lambung 38,0% (PR = 5,5; IK 95% = 1,7-17,9; p = 0,002). Pasien yang ditemukan dengan ulkus lambung sejumlah 42,3% (PR = 3,2; IK 95% = 1,2-8,6) pada pasien dengan riwayat OAINS.

**Simpulan:** Perdarahan saluran cerna bagian atas merupakan indikasi terbesar EGD pada pasien usia lanjut di Rumah Sakit Kariadi Semarang. Gambaran EGD paling banyak adalah kelainan ringan, diikuti kelainan ulkus

*lambung. Pada kasus perdarahan saluran cerna bagian atas berhubungan dengan tingginya insiden kejadian ulkus lambung yang juga berhubungan dengan tingginya insiden kejadian riwayat penggunaan OAINS.*

**Kata kunci:** usia lanjut, pola esofagogastroduodenoskopi, komorbid

## INTRODUCTION

Recent data report that the incidence of peptic ulcer is decreasing in the general population, conversely, the rates of gastric and duodenal ulcer hospitalization and mortality remain very high in older patients.<sup>1</sup> Moreover, another report showed that peptic ulcer is a common clinical finding of the gastroscopies made on patients aged 80 years or over.<sup>2</sup> Two major factors that may explain this epidemiological feature in the elderly population, i.e. high prevalence of *Helicobacter pylori* (*H. pylori*) infection and increasing prescriptions for gastroduodenal damaging drugs damage including the non-steroidal anti-inflammatory drugs (NSAIDs) and/or aspirin (acetylsalicylic acid).<sup>1</sup> Furthermore, older individuals also tend to have a higher prevalence of co-morbid factors, such as *H. pylori* infection, presence of other diseases, or use of medications (e.g. NSAIDs, bisphosphonates) that may increase their risk for acid-related disorders.<sup>3</sup> The clinical features of ulcer disease in the elderly may often differ from the standard presentation in younger people. In one study, abdominal pain was absent in over 30% of older patients with peptic ulcers seen on upper endoscopy.<sup>4</sup> Results of typical upper abdominal pain, no symptom and rate of accompanied diseases were found 10%, 55% and 47.5% respectively in geriatric group, while these were 44%, 20% and 24% respectively in non-geriatric group ( $p = 0.05$ ).<sup>5</sup>

The elderly are at particularly increased risk, and one study found that the adjusted hospitalization rate for ulcer complications was 16.7 per 1,000 persons-years among elderly medicaid patients on NSAIDs; in contrast to a rate of 4.2 among non-users, with an attributable rate of 12.5 excess hospitalizations for ulcers disease per 1,000 person-years among users.<sup>4</sup> NSAID users may be classified as low or high risk, according to the absence or presence of one or more of the following factors associated with an increased risk of bleeding, i.e. co-morbidities, corticosteroid or anticoagulant co-therapy, previous dyspepsia, peptic ulcer or ulcer bleeding, and alcohol consumption.<sup>6</sup> The aim of this study was to determine these, particularly on the co-morbidities and indications in elderly patients who had undergone esophagogastroduodenoscopy at Kariadi Hospital.

## METHOD

A cross sectional study was conducted by evaluating the eligible medical records of elderly patients at Kariadi Hospital. Variables of age, sex, chief complaint, co-morbidities, indication, and pattern of esophagogastroduodenoscopy results were evaluated.

The inclusion criteria were elderly patients with non-variceal bleeding who underwent esophagogastroduodenoscopy at Kariadi Hospital, Semarang between January 2009 and December 2010, while the exclusion criteria were patients aged  $> 60$  years with esophageal or gastric variceal bleeding.

Statistical analysis was performed using chi-square test and we estimated prevalence ratio (PR) to compare test demographic characteristics, endoscopic diagnosis, and clinical judgment. The proportion of significant variables was expressed as a prevalence ratio with  $\alpha = 0.05$  and 95% confidence interval (CI) considered as significant. The stastical analysis was performed using SPSS version 19.

## RESULTS

Among records of this retrospective data for 90 elderly patients who underwent EGD, there were 64 (71.11%) eligible male patients with predominant age of  $< 80$  years. The mean age of patients was  $69.61 \pm 6.9$  years. Most patients were at 61 years of age and the range of ages was 61-89 years (Figure 1). Baseline patient characteristics are shown in Table 1.

Figure 2 shows the distribution of EGD abnormalities found in patients who underwent EGD, i.e. gastric ulcer (25.6%), duodenal ulcer (17.8%), esophagitis (14.4%) and 56.7% of mild abnormalities. It should be considered that some abnormalities may be found coincidentally.

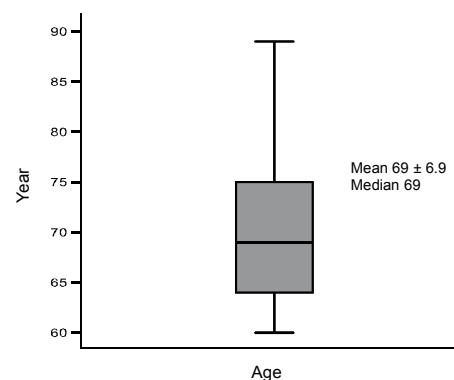


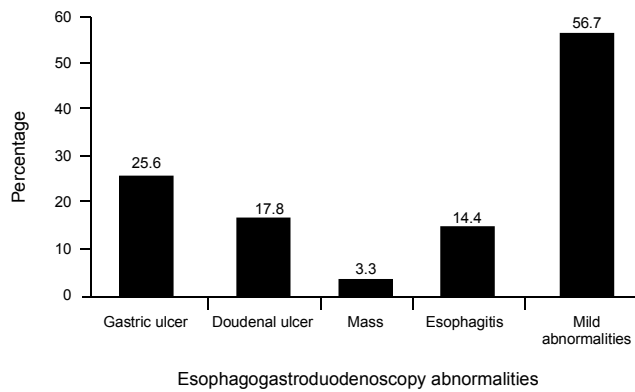
Figure 1. Age characteristics of patients

**Table 1. Baseline patient characteristics**

Variable	n (%)
<b>Sex</b>	
Male	64 (71.1)
Female	26 (28.9)
<b>Age (years)</b>	
< 80	82 (91.1)
≥ 80	8 (8.9)
<b>Esophagogastroduodenoscopy indication</b>	
Upper gastrointestinal tract bleeding	50 (55.6)
Dyspepsia (not relieved by empiric therapy)	17 (18.9)
Epigastric pain	9 (10.0)
Anemia	6 (6.7)
Abdominal mass	2 (2.2)
Vomitus	2 (2.2)
Dramatic weight loss	2 (2.2)
Dysphagia	2 (2.2)
<b>Chief complaint</b>	
Hematemesis	20 (22.2)
Epigastric pain	19 (21.2)
Nausea	18 (20.0)
Melena	16 (17.8)
Dyspneu	5 (5.6)
Other	12 (13.2)
<b>Co-morbidities</b>	
NSAID history	28 (31.1)
Chronic liver disease (non variceal)	6 (6.7)
Unetiology anemia	5 (5.6)
Diabetes mellitus	5 (5.6)
Gastrointestinal neoplasm	5 (5.6)
No co-morbid disease	14 (15.6)
Other	26 (28.6)

NSAID: non-steroidal anti-inflammatory drugs

The indications for EGD in patients with dyspepsia (who already had empiric therapy and not relieved) are listed in Table 2. About 9.1% of EGD results revealed gastric ulcer and 18.2% showed duodenal ulcer in patients with co-morbidities; while no ulcer was found in patients without co-morbidity.



**Figure 2. Distribution of EGD abnormalities in elderly patients**

Upper gastrointestinal bleeding was the main indication for EGD in this study and the EGD results demonstrated that gastric ulcer was found in 38% cases, with prevalence ratio of 5.5 (95% CI = 1.7-17.9; p = 0.002) as shown in Table 3.

Such results were also found in patients with co-morbidities (PR = 4.8; 95% CI = 1.4–6.2), which indicated great difference compared to results found

**Table 2. Distribution of EGD abnormalities found in patients with and without comorbidities**

EGD Indication	Normal or mild erosion		Gastric ulcer		Duodenal ulcer	
	No (%)	Yes (%)	No (%)	Yes (%)	No (%)	Yes (%)
<b>Without co-morbid</b>						
Upper GI tract bleeding	3 (50)	3 (50)	5 (83.3)	1 (16.7)	4 (66.7)	2 (33.3)
Dyspepsia (not relieved by empiric therapy)	0 (0)	6 (100)	6 (100)	0 (0)	6 (100)	0 (0)
Epigastric pain	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Others	0 (0)	2 (100)	2 (100)	0 (0)	2 (100)	0 (0)
<b>Total</b>	<b>3 (21.4)</b>	<b>11 (78.6)</b>	<b>13 (92.9)</b>	<b>1 (7.1)</b>	<b>12 (85.7)</b>	<b>2 (14.3)</b>
<b>With co-morbid</b>						
Upper GI tract bleeding	27 (61.4)	17 (38.6)	26 (59.1)	18 (40.9)	35 (79.5)	9 (20.4)
Dyspepsia (not relieved empiric therapy done)	3 (27.3)	8 (72.7)	10 (90.9)	1 (9.1)	9 (81.8)	2 (18.2)
Epigastric pain	2 (22.2)	7 (77.8)	7 (77.8)	2 (22.2)	9 (100)	0 (0)
Others	4 (33.3)	8 (66.7)	11 (91.7)	1 (8.3)	9 (75.0)	3 (25.0)
<b>Total</b>	<b>36 (47.4)</b>	<b>40 (52.6)</b>	<b>54 (71.1)</b>	<b>22 (28.9)</b>	<b>62 (81.6)</b>	<b>14 (18.4)</b>

EGD: esophagogastroduodenoscopy; GI: gastrointestinal

**Table 3. Esophagogastroduodenoscopy results showing gastric ulcer findings in patients with upper gastrointestinal bleeding**

UGI bleeding	Gastric ulcer		PR (CI 95%; p*)
	without	with	
Without	36 (90)	4 (10)	5.5
With	31 (62)	19 (38)	(1.7-17.9; p = 0.002)

UGI: upper gastrointestinal; \*Chi-square test; PR = prevalence ratio

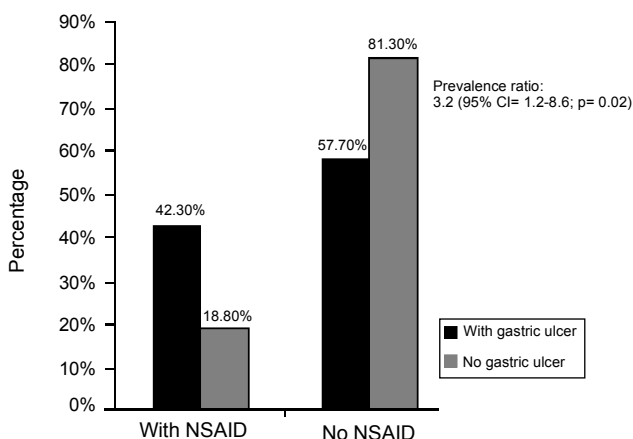
in patients without co-morbidities (PR = 0.8; 95% CI = 0.6–1.2). Moreover, the EGD results also showed duodenal ulcer in 22% cases and demonstrated that 40% cases only had mild abnormalities, which may also found in patients with co-morbidities as shown in Table 2.

When we evaluated the cases of gastric ulcer in relation to their history of NSAID usage, as shown in Table 4, the gastric ulcer was found in 42.3% among NSAID users (PR = 3.2; 95% CI = 1.2-8.6); while duodenal ulcer was found in 23.1% cases (PR = 1.6; 95% CI = 0.5-5.0). It should be considered that some abnormalities may be found coincidentally. Table 4 and Figure 4 show the correlation between gastric ulcer and co-morbidities found in NSAID users.

**Table 4. Distribution of esophagogastroduodenoscopy results among NSAID users**

NSAID	Gastric ulcer		Duodenal ulcer	
	Yes (%)	No (%)	Yes (%)	No (%)
With	11 (42.3)	15 (57.7)	6 (23.1)	20 (76.9)
Without	12 (18.8)	52 (81.3)	10 (15.6)	54 (84.4)
p*	0.02		0.4	

NSAID: non-steroidal anti-inflammatory drugs; \*Chi-square test



**Figure 4. Correlation between NSAID-induced co-morbidities and gastric ulcer**

## DISCUSSION

This study found the proportion of duodenal ulcer to gastric ulcer of 1 : 1.5, which is consistent with the study results conducted by Jyh-Ming et al. Their study showed that the proportion of duodenal ulcer to gastric ulcer in elderly population of (1 : 1.7), which is higher than the younger population (7 : 1).<sup>7</sup>

The prevalence of gastric ulcer and duodenal ulcer in this study was high and this patients had lesser abdominal symptoms and high co-morbidities. Such results are in accordance with the study conducted by Bao et al. The study indicated that elderly patients who had peptic ulcer bleeding have typical characteristics

of less abdominal pain, asymptomatic, and higher rate of morbidities, higher incidence of gastric ulcer, more dysplasia lesion and larger amount of bleeding.<sup>5</sup>

This study has demonstrated a high prevalence of NSAID-induced co-morbidity and a relatively significant correlation with upper gastrointestinal bleeding. This study results are consistent with the results of study by Alberto et al, Pilloto et al, and other epidemiological data which indicated that the incidence of NSAID and aspirin-related peptic ulcers increases with age and may be due to the increased use of these drugs by the elderly population or to pathophysiological mechanisms such as age-related changes in drug pharmacokinetics and/or reductions in gastroduodenal defensive mechanisms.<sup>1,8</sup>

There is an interesting finding in this study that the some of EGD revealed ulcers in patients who had co-morbidities and dyspepsia (that not relieved symptom although they already had received empiric therapy) as indication for the EGD. In contrast, there was no ulcer found in patient without any co-morbidity. The result has provided a new insight that co-morbidities have important role on the need for EGD; while the dyspepsia in senile condition without any co-morbidity does not have any impact on the need for EGD.

Table 4 shows this study results that high prevalence of gastric ulcer was found in 42.3% patients who were NSAID users (PR = 3.2; 95% CI = 1.2-8.6; p = 0.02); while only 23.1% patients were found with duodenal ulcer (PR = 1.5; 95% CI = 0.5–5.0; p = 0.04). This results are consistent with the results by Alberto, which demonstrated that 40% of gastric ulcer and 25% of duodenal ulcer in the elderly patients are associated with the use of NSAID and/or aspirin.<sup>9</sup> Therefore, some strategies should be taken in order to prevent NSAID-related peptic ulcers in elderly, i.e. the use of low doses and/or less damaging NSAIDs, the use of coxibs, gastroprotection with antisecretory drugs, the eradication of *H. pylori* infection in infected patients as well as educational programs to reduce inappropriate prescriptions. To maintain high cure rate, anti secretory agents to neutralize the gastric acid is required, so that the restitution process could go well.<sup>10</sup> This study has also demonstrated that there was no significant difference on duodenal ulcer findings between patients with and without history of NSAID usage.

However, results must be considered with the limitations of this study including: (1) those inherent to retrospective study of data obtained from medical records; (2) no data on *H. pylori* infection was available

since such data was rarely collected by examining medical records; (3) small sample size and larger sample would be required to evaluate the correlation among various factors.

## CONCLUSION

Upper gastrointestinal tract bleeding is the most common indication for EGD in elderly patients at Kariadi Hospital Semarang. EGD results reveal that mild abnormalities were the most common finding, followed by gastric ulcer. In this cross-sectional study, we found that upper gastrointestinal bleeding is associated with higher incidence of gastric ulcer among NSAID users compared to the non-NSAID users. However, there was no significant difference on the incidence of duodenal ulcers among the NSAID users and non-users.

## SUGGESTION

Several strategies are available to prevent NSAID-related peptic ulcers, i.e. the use of low dosage and/or less damaging NSAIDs, the use of coxibs, gastroprotection with anti-secretory drugs, the eradication of *H. pylori* infection in infected patients as well as educational programs to reduce inappropriate prescriptions. Necessary strategy for treating patients who have the gastrointestinal and non-gastrointestinal risks, i.e. disability, co-morbidity and frailty of patients, according to a comprehensive geriatric assessment are recommended. The main goals for treating peptic ulcer disease in elderly are to reduce recurrence of the disease and to prevent complications, especially bleeding and perforation.<sup>1,11,12</sup>

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Correspondence:

Agung Prasetyo

Division of Gastroentero-hepatology, Department of Internal Medicine

Dr. Kariadi General Hospital

Jl. Dr. Sutomo 16 Semarang 50231 Indonesia

Phone: +62-24-8446757 Facs: +62-24-8446758

E-mail: [agung\\_pra@yahoo.com](mailto:agung_pra@yahoo.com)

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