



Original article

Prevalence, endoscopic and histopathological characteristics of early gastric cancer in Vietnamese patients

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Abstract: Introduction: In Vietnam, gastric cancer (GC) ranks 4th in incidence and 3rd in mortality among all cancers. Most of the new GC cases in Vietnam were diagnosed at an advanced stage. Data on early gastric cancer (EGC) in Vietnam is very limited. This study aimed to evaluate the prevalence, endoscopic and histopathological characteristics of EGC among Vietnamese patients. **Methods:** This is a retrospective study conducted at the University Medical Center of Ho Chi Minh City, Vietnam from January 2014 to December 2019. Electronic medical records of patients with EGC were reviewed to collect data regarding age, gender, endoscopic findings of EGC lesions (including location, size, and their type according to the Japanese classification of gastric carcinoma), and histopathological characteristics of these lesions based on the resected gastric specimens. **Results:** Among 1666 patients with GC, there were 67 EGC cases, accounting for 4.0%. All of the patients diagnosed with EGC were older than 40 years. The detection rate of EGCs gradually increased during the study period. The EGC lesions were mostly located in the antrum-incisura angularis (73.1%) with a median diameter of 1.0 cm. Regarding macroscopic types, a majority of these lesions were classified as type 0-IIc (31.3%) and type 0-IIa+0-IIc (29.9%). The most common histological type of EGC was adenocarcinoma (82.1%) and poorly differentiated type (40.3%). **Conclusions:** EGCs are mainly detected in individuals aged over 40 years. EGC lesions are commonly located in the antrum-incisura angularis and have characteristic features including the macroscopic and histological types.

Keywords: early gastric cancer; adenocarcinoma; endoscopic; histological; Vietnamese.

1. INTRODUCTION

According to GLOBOCAN 2020, gastric cancer (GC) was the fifth most common malignancy and the third leading cause of cancer death worldwide [1]. To improve the overall survival of GC, some countries such as Korea and Japan have established GC screening programs in symptomatic patients with a detection rate of early gastric cancer (EGC) in over 50% of GC cases [2-4]. EGC is defined as a malignant lesion

limited to the gastric mucosa or submucosa, irrespective of lymph node metastasis (T1, any N) [5]. It can be minimally invasively treated by endoscopic mucosal resection (EMR) or endoscopic submucosal dissection (ESD) with a 5-year survival rate of 95% [6, 7].

In Vietnam, GC ranks 4th in incidence and 3rd in mortality among all cancers [8]. In 2020, there were 17,906 new GC cases diagnosed in Vietnam, but the number of deaths related

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to GC was up to 14,615 cases [8]. This is likely due to the fact that most of the new GC cases in Vietnam were diagnosed at an advanced stage. Data about the characteristics of EGC in Vietnam is very limited. Therefore, this study aimed to evaluate the prevalence and endoscopic and histopathological characteristics of EGC among Vietnamese patients.

2. MATERIALS AND METHOD

2.1. Patients and study design

We retrospectively reviewed the electronic medical records of all patients diagnosed with EGCs at University Medical Center, Ho Chi Minh City, Vietnam between January 2014 to December 2019. Patient inclusion criteria were (1) having undergone diagnostic esophagogastroduodenoscopy (EGD) and interventional treatment by gastrectomy or ESD/EMR, (2) having histopathologically confirmed EGC, and (3) having complete medical records. We excluded individuals who had a history of treated GC and those with non-epithelial tumors of the stomach (malignant lymphoma, sarcoma, mesenchymal tumor, etc.). The total number of GC cases detected at the study site during this period was also recorded. The Institutional Review Board of the hospital approved the study protocol and individual informed consent for this retrospective study was waived.

2.2. Endoscopic and histopathological assessment

The endoscopic characteristics of all EGC cases were evaluated using conventional white-light EGD and macroscopically classified according to the Japanese

classification of gastric carcinoma [9]. The tumor location was defined based on the center of the lesion. The tumor size was evaluated based on its largest diameter. Histopathological evaluation was performed on the resected gastric specimens from surgery or ESD/EMR procedures. The EGCs were diagnosed by pathologists specialized in gastrointestinal pathology following the World Health Organization classification of tumors of the digestive system [10].

2.3. Statistical analysis

Statistical analyses were performed using SPSS version 23.0 (SPSS Inc., Chicago, IL). Qualitative variables are presented as percentages and numbers, while quantitative data are expressed as mean \pm standard deviation.

3. RESULTS

3.1. Patients demographic characteristics

Among 1666 patients with GC diagnosed from January 2014 to December 2019, there were a total of 67 EGC cases, accounting for 4.0%. All patients diagnosed with EGC were older than 40 years old (range 42 – 81 years). Their mean age was 59.1 ± 9.6 years. Of these, subjects aged 50 years and older accounted for the majority (79.1%). The male-to-female ratio was 1.7:1. The number of EGC cases detected each year gradually increased during the study period ($p < 0.001$) (Figure 1).

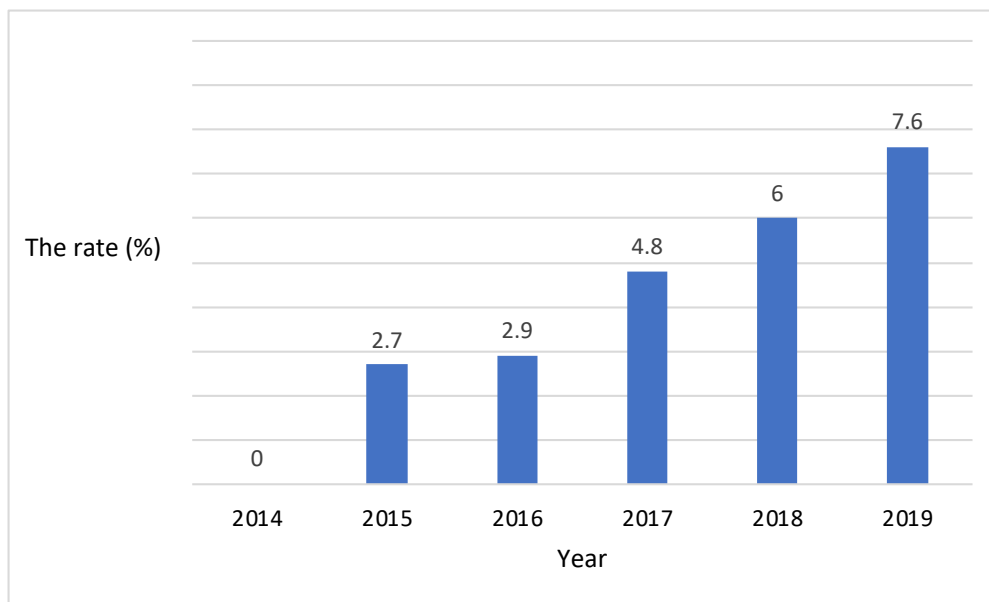


Figure 1. The rate of EGCs detected for each year

3.2. Endoscopic characteristics of EGCs

Table 1 summarizes the endoscopic characteristics of EGC lesions. More than half of EGC lesions were located in the antrum (55.2%). The median lesion size was 1.0 cm (range

0.3 to 5.0 cm). The most common macroscopic types of these lesions were 0-IIc (31.3%) and 0-IIa+0-IIc (29.9%).

3.3. Histopathological characteristics of EGCs

The histopathological examination of resected gastric specimens indicated 55 (50.0%) cases of adenocarcinoma and 12 (17.9%) cases of signet-ring cell carcinoma. Regarding the degree of differentiation, poorly-differentiated EGCs were

common (40.3%), while well-differentiated and moderately-differentiated cases accounted for 22.4% and 32.8%, respectively.

Table 1. The endoscopic characteristics of EGC lesions

Characteristics	N (%)
Location	
▪ Cardia	4 (6.0)
▪ Fundus	1 (1.5)
▪ Body	12 (17.9)
▪ Incisura angularis	12 (17.9)
▪ Antrum	37 (55.2)
▪ ≥ 2 locations	1 (1.5)
Classification	
▪ Type 0-I	4 (6.0)
▪ Type 0-IIa	11 (16.4)
▪ Type 0-IIb	2 (3.0)
▪ Type 0-IIc	21 (31.3)
▪ Type 0-IIa+IIc	20 (29.9)
▪ Type 0-III	9 (13.4)
Size	
▪ < 1cm	16 (36.4)
▪ ≥ 1cm to < 2cm	15 (34.1)
▪ ≥ 2cm	13 (29.5)

4. DISCUSSION

The detection of EGC among Vietnamese patients is challenging despite the high incidence of GC in the country. This may be due to the lack of widespread image-enhanced endoscopy (IEE) as well as the absence of population-based GC screening programs. In the present study, EGCs accounted for only 4.0% of the total number of GCs. Recently, a study from Central Vietnam reported a higher rate of EGC cases (7.6%) diagnosed by screening IEE [11]. However, this detection rate of EGCs was still very low compared with Korea (63.6%) and Japan (>80%) [2-4]. Several factors associated with the low efficacy of endoscopic diagnosis of EGC in Vietnam included no routine preparation with mucolytic and defoaming agents before EGD and no routine use of IEE during the procedure [12]. In addition, a national multicenter study revealed that EGDs performed at hospitals with an annual EGD volume of < 30,000 or > 60,000 procedures were associated with a lower proportion of EGC detected compared with those performed at hospitals with an annual EGD volume of 30,000-60,000 [12]. These observations could result from the different experiences and workloads of endoscopists. In hospitals with a small annual EGD volume, endoscopists could be less experienced with EGC screening. On the other hand, the overloaded work in

hospitals with high annual EGD volume may lead to miss EGC lesions due to the shorter time of endoscopic examination. However, the detection rate of EGCs gradually increased from 2014 to 2019, which reflects an improvement in the endoscopic detection of EGC in Vietnam. This improvement may result from the more widely indicated EGD for dyspeptic patients and better familiarity with the macroscopic types of EGC lesions by Vietnamese endoscopists. Overall, the low rate of EGCs detected in Vietnam underscores the importance of national programs to improve the quality and effectiveness of endoscopy in GC screening.

In this study, EGCs were more prevalent in men, which was in accordance with other studies in Asia and Western countries [13-15]. The mean age of Vietnamese patients with EGC was 59.1 ± 9.6 years. This result was quite similar to a Japanese study that reported the mean age of EGCs as 58.4 ± 11.9 years [16]. The study of Liu *et al.* from China also reported the mean age of EGCs as 63.7 ± 12.4 years [13]. In Europe, the mean age of EGCs was 59.9 years [14]. In our study, all EGCs were detected in individuals aged over 40 years. This finding supports the recommendations to start screening for GCs at the age of 40 in high-incidence regions according to current guidelines and consensus [17, 18]. A high-incidence region is defined as an age-standardized

incidence rate (ASR) > 20 cases per 100,000 populations, an intermediate-incidence region as 10–20 per 100,000, and a low-incidence region as < 10 per 100,000 [19]. According to GLOBOCAN 2020, Vietnam is among the intermediate-to-high-incidence regions of GC. The ASR of GC in Vietnam has been reported to be about 15.5 per 100,000 people of both sexes, 21.7 per 100,000 for males, and 10.6 per 100,000 for females [8]. These ASRs are the highest rates compared to other South-East Asian countries [8].

Our study revealed that the majority of EGCs were detected in the antrum-incisura angularis. Previous studies in Asia and Europe also showed that most EGCs were found in the lower part of the stomach [14], [13]. A study from Korea analyzed the characteristics of EGC lesions treated by ESD, which reported that the most common location of the lesion was in the lower third (89.6%) and the lesser curvature of the stomach (43.9%) [20]. According to the classification of the Japanese Gastric Cancer Association, the most common macroscopic type was 0-IIc (31.3%), which accords with other previous studies [11, 15, 16]. These findings may serve as a good reference for enhancing the endoscopic detection rate of EGC.

The majority of type 0-IIc lesions were poorly differentiated (50%) [16]. In our study, the predominant histopathology of EGCs was adenocarcinoma (82.1%) and poorly differentiated type (40.3%). Regarding prognosis, the poorly differentiated status of GC was shown to be associated with unfavorable overall survival [21, 22]. However, EGCs conferred a favorable prognosis if the lesions were limited to mucosa [23, 24].

Our study has several limitations due to its retrospective nature. Firstly, we only collected the age and gender of the patients but did not have information on the clinical manifestation, medical history, and *Helicobacter pylori* infection status. Secondly, we only reviewed the endoscopic records to collect data regarding the endoscopic characteristics of EGC lesions and did not have detailed information on the atrophic mucosal status. As a result, we did not take into account these factors when describing the clinical and endoscopic characteristics of EGCs.

Conclusion

In conclusion, EGC mainly occurs in individuals aged over 40 years. EGC lesions are commonly located in the antrum-incisura angularis and have characteristic features including the macroscopic and histological types. These characteristics may play a critical role in the endoscopic screening for EGC.

LIST OF ABBREVIATIONS

ASR: age-standardized incidence rate
EGC: early gastric cancer
EGD: esophagogastroduodenoscopy
EMR: endoscopic mucosal resection
ESD: endoscopic submucosal dissection
GC: gastric cancer
IEE: image-enhanced endoscopy

ETHICAL STATEMENT

The Institutional Review Board of University Medical Center approved the study protocol and individual informed consent for this retrospective study was waived.

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None.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.


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AUTHORS' CONTRIBUTION


Quach D initiated the study conception and designed the research study. Tran T, Tran V, Nguyen T and Le N contributed to the data acquisition. Tran T and Luu M performed the statistical analysis, interpreted the data, and drafted the manuscript. Quach D critically revised the manuscript. All authors approved the final version of the draft. Tran T submitted the manuscript.


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