Incidence of malignancy and the role of gastric biopsy in Patients with perforated gastric ulcer in Thailand.

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Abstract

Background: Perforated gastric ulcer is one of the most common diseases that require emergency surgery. The main etiology of perforation is benign ulcer but malignant ulcer is found in 6 – 14% of cases and difficult to be preoper¬atively diagnosed. Then routine gastric biopsy is recommended. But difference in behavior, characters, and etiology of gastric ulcer in Thai patient raise the question of the real incidence of gastric malignancy and the role of gastric biopsy in Thai patients.

Objectives: To determine the incidence of gastric malignancy and to explore the associated risk factors in the patients with perforated gastric ulcer, and to assess the role of gastric biopsy in the patient with gastric ulcer perforation at Suratthani hospital, Thailand.

Methods: A retrospective study was conducted by review-ing medical records from all 225 patients who were diagnosed of perforated gastric ulcer during January 1st, 2011 to December 30th, 2017 in Suratthani hospital. The 178 records which had sufficient data were enrolled into the study.

Results: The incidence of malignancy in perforated gastric ulcer was 2.8% (5 of 178 patients). Two statistical significant factors that associated to malignancy were gross appearance of ulcer (OR 20.6, $p<0.05$) and the location of ulcer. The gross appearance of ulcer which associated to malignancy were chronic ulcer (8.8%, 3 of 34 patients) and mass like lesion (66%, 2 of 3 patients). None of 147 acute ulcers was malignancy. The ulcers that located at non-prepyloric area were significant associated to malignancy (OR 18.5, $p<0.05$).

Conclusion: The incidence of malignancy in perforated gastric ulcer was very low in this study. Two statistical significant factors that associated to malignancy were gross appearance and location of ulcer. Gastric biopsy maybe not necessary in acute ulcer that located at pre-pyloric area.

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Keyword : Gastric ulcer perforation, Gastric cancer, Gastric biopsy.

Back ground

Perforated gastric ulcer is one of the most common diseases that require emergency surgery[1] especially in Thailand[2]. The perforated gastric ulcer is usually benign[3] but some perforated gastric ulcers cause from gastric malignancy. Rate of gastric malignancy associate with perforated gastric ulcer in the reports ranged vary from 5-16% [3-6]. It is difficult to preoperatively differentiated malignant ulcer from benign ulcer, because they have the same preoperative signs and symptoms. The definite diagnosis of malignancy is usually made only during the postoperative pathologic examination[7]. From above reason, most surgical textbooks[8-10] and guidelines[11-13] recommend to perform routine gastric biopsy in all perforated gastric ulcer.

Thai patients with perforated gastric ulcer were found more frequently and had difference in epidemiology and etiology. The previous data showed Thai patients with perforated gastric ulcer were younger, more related to NSAID and steroid use, lower rate of H.pylori infection and lower rate of malignancy[14-15]. Emre Ergul et al. found that ulcers size smaller than 0.5 cm and thickness less than 0.6 cm, in the patient's age less than 60 years old, have very low risk of malignancy[16]. These data raise the question about the role of gastric biopsy in Thai patients with perforated gastric ulcer.

The aim of this study is to determine the incidence of malignancy and to explore the associated risk factors in the patients with perforated gastric ulcer, and to assess role of gastric biopsy in patient with gastric ulcer perforation at Suratthani hospital Thailand.

Material and method

In this retrospective descriptive study, we evaluated all of 225 patients who were admitted with perforated gastric ulcer at the Suratthani hospital from January 2013 to December 2017, and were under-went exploratory laparotomies. The gastric perforation due to trauma or iatrogenic causes and no pathologic reports were excluded. Data were obtained by review of electronic records, case notes, pathologic report and operative note.

We used the Chi-square test or Fisher's exact probability test to compare nominal data. The Mann-Whitney U- test was used to compare continuous variables. The data were analyzed using SPSS 19.0 (Chicago, IL). A probabil¬ity value of $p < 0.05$ was considered statistically significant.

Result

During the study period, 225 patients were diagnosed of perforated gastric ulcer and were under-went exploratory laparotomies; 77 patients were excluded due to no pathologic report or incomplete records. Of included 178 patients, the mean age was 51.9 years, and 33.1% (59 patients) age over 60 years. We found that the ratio of having gastric perforation is higher in male gender (80.8%) and high rate of poor personal habits such as smoking (56.1%), alcoholic consumption (36%) and self-medication (47.6%). The most common gross appearance of ulcers were acute ulcer in 141 patients(79.6%) at pre-pyloric area (95.5%) while chronic ulcer were found in 34 patients and mass liked lesion was found in 3 patients. Rate of malignancy in this study is very low (2.8%) (Table 1).

The results of the analysis of malignancy indicators, including patient demographics and intraoperative finding was showed in Table 1, the relation to gastric perforation are presented in Table 2. The variables that were significantly associated

with malignancy were the gross appearance of the ulcer (OR 20.2, p<0.05) and the location of the ulcer's perforation. We found 3 malignancy from 34 patients in chronic ulcer group (8.8%), and 2 malignancy from 3 patients from mass group (66%) but no malignancy was found in 141 patients in acute ulcer group (0%). The ulcers at non pre-pyloric area was significant higher risk of malignancy than ulcers at pre-pyloric area (OR 18.5, p<0.02).

Among the 5 malignancy patients, in 2 (40%) of these patients malignancy was diagnosed subjectively, based on the surgeon's experience, and a curative operation was attempted at the time of emergency surgery and simple closure with omental patch was performed in 3 (60%) patients. Of the 5 patients, 4 (80%) patients had the histopathologic diagnosis of adenocarcinoma, while the lymphoma was diagnosed in 1 (20%) patients. The tumor perforation was located at pre-pyloric region of the stomach in 3 (60%) patients, at the lessor curve of the stomach in 1 (20%) patient, and at the body of the stomach in 1 (20%) patient. The overall survival period was 58.81±67.70 days for all the 5 patients. Of the 5 patients, 2 (40%) patients had died within 30days, 2 (40%) patient died because of progressive diseases at 8 months and 10 months, and only a patient with gastric lymphoma was still alive. (Table 3)

Table 1 Patient demographic data

Age(years)	Number of patient (total 178)	%
<40	49	27.5
40-50	44	24.7
50-60	26	14.6
60-70	34	19.1
>70	25	14
Mean 51.9		
Sex		
- Male	144	80.8
- Female	34	19.2
Smoking	100	56.1
NSAID and ASA used	15	8.4
Self-medication	84	47.2
BMI		
<18	30	16.8
18-20	58	32.6

Age(years)	Number of patient (total 178)	%
20-25	85	47.8
>25	5	2.8
Mean 20.4		
Alcohol drinking	64	38.2
Gross appearance of ulcer		
-Acute ulcer	141	79.2
-Chronic ulcer	34	19.1
-Mass liked lesion	3	1.7
Location of ulcer		
- Pre pyloric	170	95.5
- Lesser curve	3	1.7
- Body	5	2.8
H.pylori Infection	33	18.5
Malignant gastric perforation	5	2.8

Table 2 Comparison between Benign and Malignancy perforation

Features	Number of benign perforation	Number of malignancy perforation (%)	OR(p-value)
Age(year)			
< 60	116	3(2.5%)	1.35(0.74)
>60	57	2(3.3%)	
Sex			
- Male	141	3(2%)	2.93(0.22)
- Female	32	2(5.8%)	
BMI			
<20	86	2(2.2%)	01.48(0.66)
>20	87	3(3.3%)	
Smoking			
- Yes	97	3(3%)	0.85(0.86)
- No	76	2(2.5%)	

Features	Number of benign perforation	Number of malignancy perforation (%)	OR(p-value)
NSAID and ASA used			
- Yes	14	1(6.6%)	0.12(0.99)
- No	159	4(2.5%)	
Gross appearance of ulcer			
- Acute ulcer	141	0(0%)	20.66(0.005)
- Chronic ulcer	31	3(8.8%)	
- Mass liked lesion	1	2(66.6%)	
Location of ulcer			
- Prepyloric area	167	3(1.8%)	18.55(0.001)
- Non prepyloric area	6	2(25%)	

Table 3 Data of patient with malignant gastric cancer

	Case1	Case 2	Case3	Case 4	Case 5
Age	35	80	49	65	55
Sex	Male	Female	Male	Female	Male
BMI	17.5	22.9	22.6	19.5	21.5
Smoking	Y	N	Y	N	Y
Alcohol	N	N	N	N	Y
Gross appearance of tumor	Chronic ulcer	Mass size 6cm	Chronic ulcer	Mass	Chronic ulcer
Location of ulcer	Prepyloric	Body	Prepyloric	Pre pyloric	Lesser curve
Operation	Simple suture	Distal gastrectomy	Simple suture	Distal gastrectomy	Simple suture
Pathologic report	Lymphoma	Adenocarcinoma	Adenocarcinoma	Adenocarcinoma	Adenocarcinoma
Patient status	Still alive at s 24 month	Death within s 30 day	Death from progressive diseases at 10 months	Death within 30 days	Death from progressive diseases at 8 months

Discussion

Demographic data of the patients with perforated gastric ulcer from this report is different from other Asian and Western countries report. Patient's age is significant lower in this study, mean 51.9 years compared with 71 years from previous study in Thai17 and 68 years from systematic review and had significant lower malignancy rate (2.8 % in this study, 5 – 16% in other studies18, 19), which could be explained with the patients had higher rate of NSAID use and self-medication in this report20. These finding reflect the unnecessary NSAID use and self-medication problems in the southern region of Thailand.

The rate of malignancy is much lower than expected, we found that only 5 patients had malignant ulcer then it is difficult to tell what is actually related with malignancy. Only two statistic significant factors that associated with malignancy in this study are gross appearance of the ulcer and location of the ulcer. We didn't find any malignancy in 143 patients with acute ulcer (0 from 143). 95% of these ulcers were located at pre-pyloric area. So ulcers that were located at the other area had significant higher risk of malignancy than ulcers at pre-pyloric area (25%, 2 patients from 8 patients). From these data, gastric biopsy maybe not necessary in acute ulcer that located at pre-pyloric area. We recommend to perform biopsy in the patient with chronic ulcer and the patient with mass liked lesion or located at the other area than pre-pyloric area. The weak point of this study is no clear definition for acute ulcer and chronic ulcer, they were only described in operative note by surgeon. Emre Ergul et al study showed that a patient with perforated gastric ulcer which diameter more than 0.5 cm and wall thickness with edema more than 0.6 cm has a high possibility of having gastric cancer16. Then chronic ulcer should mean the ulcer with large diameter and hard thick rim.

The limitation of this study were low number of malignancy cases, no clearly definition of acute and chronic ulcer and about 30% of small acute gastric perforation in this study wasn't biopsy. A new trial with a larger number of patients and more detailed data such as occupation, type of food and drink consumption, size and thickness of ulcer, may be needed to confirm the effectiveness of the recommendation that we suggested. We did not come cross any study in which emergency gastric perforations were studied in this way.

Conclusion

The incidence of malignancy in perforated gastric ulcer was very low in this study. Two statistical significant factors that associated to malignancy were the gross appearance and location of the ulcer. Gastric biopsy maybe not necessary in acute ulcer that located at pre-pyloric area.

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