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ORIGINAL ARTICLE

Clinical Trials Study

Clinical manifestation, lifestyle, and treatment patterns of chronic erosive gastritis: A multicenter real-world study in China

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Abstract

BACKGROUND

Although chronic erosive gastritis (CEG) is common, its clinical characteristics have not been fully elucidated. The lack of consensus regarding its treatment has resulted in varied treatment regimens.

AIM

To explore the clinical characteristics, treatment patterns, and short-term outcomes in CEG patients in China.

METHODS

We recruited patients with chronic non-atrophic or mild-to-moderate atrophic gastritis with erosion based on endoscopy and pathology. Patients and treating physicians completed a questionnaire regarding history, endoscopic findings, and treatment plans as well as a follow-up questionnaire to investigate changes in symptoms after 4 wk of treatment.

RESULTS

Three thousand five hundred sixty-three patients from 42 centers across 24 cities in China were included. Epigastric pain (68.0%), abdominal distension (62.6%), and postprandial fullness (47.5%) were the most common presenting symptoms. Gastritis was classified as chronic non-atrophic in 69.9% of patients. Among those with erosive lesions, 72.1% of patients had lesions in the antrum, 51.0% had multiple lesions, and 67.3% had superficial flat lesions. In patients with epigastric pain, the combination of a mucosal protective agent (MPA) and proton pump inhibitor was more effective. For those with postprandial fullness, acid regurgitation, early satiety, or nausea, a MPA appeared more promising.

CONCLUSION

CEG is a multifactorial disease which is common in Asian patients and has non-specific symptoms. Gastroscopy may play a major role in its detection and diagnosis. Treatment should be individualized based on symptom profile.

Key Words: Chronic erosive gastritis; Symptom; Endoscopic findings; Treatment pattern; Real-world

Core Tip: This multicenter study is the first real-world observational study to explore lifestyle characteristics, symptoms, endoscopic findings, treatment patterns, and short-term outcomes in patients with chronic erosive gastritis in China. Our findings suggest that it is a multifactorial disease influenced by lifestyle, obesity, infection, emotion, and mood. Epigastric pain, abdominal distension, and postprandial fullness were the most common initial symptoms, which are non-specific. Therefore, gastroscopy may be valuable for detection and diagnosis. Individualized treatment based on symptom profile is crucial.

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INTRODUCTION

Chronic gastritis is a common illness that affects billions of individuals worldwide[1,2]. Among the different types, chronic erosive gastritis (CEG) is the most common. In 2014, the Chinese Chronic Gastritis Research group conducted a nationwide multicenter study that enrolled 8892 patients with chronic gastritis from 33 centers across 10 cities; 49.4% of patients were diagnosed with superficial gastritis and 42.3% with erosive gastritis, which indicated that chronic superficial gastritis and CEG are the most common endoscopic findings in Chinese patients[3]. Although CEG does not carry a risk of cancer, it causes histological changes in the gastric mucosa and various gastrointestinal (GI) symptoms that may result in decreased quality of life.

According to the Sydney System for the classification of gastritis, chronic gastritis can be divided into non-atrophic and atrophic types based on endoscopic and pathological evaluations[4]. The topographical patterns of chronic gastritis range from antrum-predominant to corpus-predominant gastritis or pangastritis[5]. Erosive gastritis is defined as any type of gastritis accompanied by erosions in the mucosa, which are identified as either flat or minimally depressed white spots surrounded by a reddish area that may be accompanied by superficial bleeding or small nodules with central umbilication that mimics octopus suckers[6]. In general, erosive gastritis involves inflammatory mucosal damage that can lead to ulceration or bleeding[7,8]. Although gastric carcinogenesis and peptic ulcers have attracted considerable research attention over the past decade, few studies have focused on CEG.

Whether the pathogenesis of erosive gastritis involves elevated production of gastric acid or is related to weakened mucosal defenses has been debated for decades[6,9]. Although *Helicobacter pylori* (*H. pylori*) infection[1,10], stress[11], and obesity[7] are potentially correlated with CEG incidence, further evidence is needed. Furthermore, the impact of medications such as non-steroidal anti-inflammatory drugs (NSAIDs) and warfarin on CEG remains unclear[12,13]. CEG risk factors, presentation, endoscopic and histopathological findings, therapeutic options, and treatment effects remain largely controversial. As a result, treatment practices vary. This study was conducted to aid in understanding the clinical and lifestyle characteristics, treatment patterns, and short-term outcomes of CEG in Chinese patients.

MATERIALS AND METHODS

Patient selection

This real-world, multicenter, prospective, observational cohort study was conducted in 42 participating centers in 24 cities in China from April 2019 to December 2019. The study flow chart is shown in Figure 1.

Patients aged 18 to 70 years with a diagnosis of chronic non-atrophic or mild-to-moderate atrophic gastritis with erosions based on both endoscopic and pathological evaluations were eligible for inclusion. We excluded patients with any of the following criteria: (1) Chronic atrophic gastritis with intraepithelial neoplasia; (2) other mucosal lesions, such as gastric ulcers; (3) diagnosis of dementia, delirium, severe mood disturbance, or other mental disorder; (4) diagnosis of severe cardiac or cerebrovascular disease; (5) malignancy that required ongoing treatment; (6) history of subtotal gastrectomy; (7) history of previous endoscopic procedure such as endoscopic submucosal dissection or endoscopic mucosal resection; (8) pregnancy; or (9) any other condition that was considered unsuitable for the study. Erosive gastritis was determined by endoscopy according to the Sydney System and 2017 Chinese consensus on chronic gastritis[14]. All patients provided written informed consent. The study protocol was approved by the ethics committees of all participating institutions (Clinical registration number: ChiCTR2100047690).

Study design

Patients were asked to complete the first part of a baseline questionnaire, which contained questions regarding lifestyle, other medical conditions, medications, and major GI symptoms and their severity, with the help of physicians. Each symptom was graded as 0 (non-existent), 1 (mild and occasional), 2 (obvious and frequent, partially disturbing daily life), or 3 (severe, disturbing daily life). Physicians then independently completed the second part of the questionnaire, which

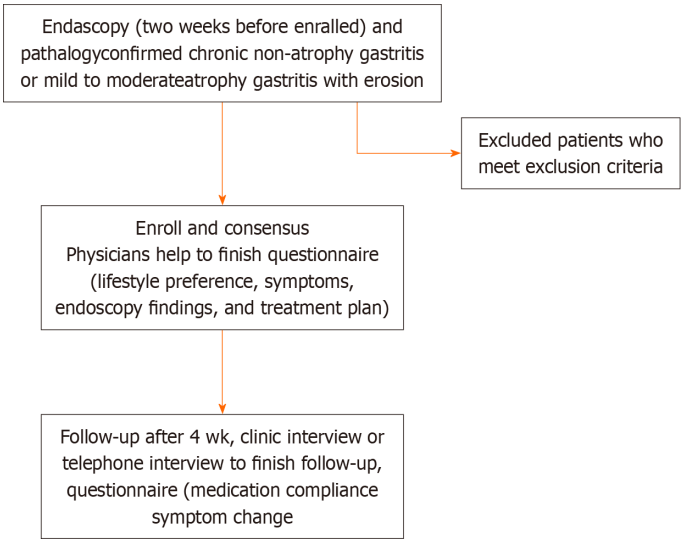

Figure 1 Study flow chart.

contained information regarding endoscopy findings and treatment. Four weeks later, patients completed a follow-up questionnaire, which contained questions regarding medication compliance and major GI symptoms and their severity with the help of medical assistants, either in the clinic or by telephone interview.

Clinical effect evaluation

The severity of symptoms was scored at the time of enrollment and during follow-up. Symptoms included epigastric pain, abdominal distension, postprandial fullness, early satiety, acid regurgitation, nausea, belching, vomiting, and others. Clinical effectiveness of treatment was defined as a decrease in symptom score. Participants were categorized into four groups according to treatment strategy: Mucosal protective agent (MPA), proton pump inhibitor (PPI), MPA + PPI, and MPA + PPI + prokinetic drug (PD).

Statistical analysis

Categorical variables are presented as absolute values with relative frequencies. Comparisons of categorical variables were performed using the chi-square test or Fisher's exact test as appropriate. Odds ratios (ORs) with 95% confidence intervals (95%CIs) were calculated using logistic regression and adjusted for age and sex. Statistical analyses were performed using SAS software version 9.3 (SAS Institute Inc., Cary, NC, United States). All tests were two-sided. $P < 0.05$ was considered significant.

RESULTS

Physician characteristics

A total of 111 physicians were randomly selected from a panel of gastroenterologists from the participating centers. Sixty-one (55.0%) were men and fifty (45.0%) were women. The demographic distribution of each participating center is shown in Supplementary Figure 1.

Patient characteristics

The data of 3563 patients were included for analysis. Patient demographics are shown in Supplementary Figure 1. Patients aged between 40 and 60 years comprised 52.7% of the patients and 49.5% were men. Few patients reported comorbidities, although 310 (8.7%) had a family history of malignancy (Table 1).

Lifestyle

Two-thirds of patients (66.2%) had no history of smoking; 29.4% and 4.4% were current or former smokers, respectively. Half (50.1%) had no history of alcohol consumption, whereas 45.3% and 4.6% were current or former drinkers, respectively. Regarding dietary habits, 66% of patients ate a regular diet and 69.8% never drank coffee. Detailed dietary preferences are shown in Table 1. Almost half of patients (47.1%) slept ≥ 7 h per night on average and 32.8% reported irregular sleep (Table 1).

Medication

NSAIDs were the most commonly used medication (8.3%). Anticoagulation drugs and corticosteroids were used by 4.6% and 2.0% of patients, respectively (Table 1).

Table 1 Patient characteristics, *n* (%)

Variable	*n* = 3563
I Baseline characteristics	
Age group at enrollment (yr)	
0-20	53 (1.5)
21-30	321 (9.0)
31-40	617 (17.3)
41-50	920 (25.8)
51-60	959 (26.9)
> 60	693 (19.4)
Gender	
Male	1765 (49.5)
Female	1798 (50.5)
Comorbidities	
Bile reflux	343 (9.6)
Liver disease or cirrhosis	137 (3.8)
Pancreatic disease	58 (1.6)
Autoimmune disease	13 (0.4)
Chronic kidney disease	52 (1.5)
Post GI surgery	61 (1.7)
Family history of malignancy	310 (8.7)
Gastric carcinoma	185 (5.2)
Other malignancy	125 (3.5)
II Lifestyle	
Alcohol use history	
Never	1784 (50.1)
Former user	163 (4.6)
Less than 1 d per week	955 (26.8)
1-2 d per week	288 (8.1)
3-6 d per week	206 (5.8)
everyday	167 (4.7)
Smoking history	
Never	2357 (66.2)
Former smoker	157 (4.4)
Less than 1 pack per week	229 (6.4)
1-2 packs per week	277 (7.8)
3-6 packs per week	236 (6.6)
More than 1 pack per day	307 (8.6)
Diet regularity	
Regular	2352 (66.0)
Irregular in 1-2 d per week	617 (17.3)
Irregular in 3-6 d per week	285 (8.0)
Irregular everyday	309 (8.7)

Coffee intake	
Never	2486 (69.8)
Less than 1 d per week	633 (17.8)
1-2 d per week	178 (5.0)
3-6 d per week	130 (3.6)
Everyday	136 (3.8)
Diet preference (multiple choices)	
Normal	1477 (41.5)
Healthy diet (vegetable dominate)	904 (25.4)
Spicy food	841 (23.6)
Smoked or pickled food	527 (14.8)
Hot food	386 (10.8)
Sleep duration	
≥ 7 h per day on average	1680 (47.1)
< 7 h per day on average	1883 (52.8)
Sleep regularity	
Regular	2391 (67.1)
Irregular	1172 (32.8)
III Medication	
NSAIDs	295 (8.3)
Anticoagulation drugs	164 (4.6)
Corticosteroids	73 (2.0)
IV Stress and mood	
Feeling stressed	974 (27.3)
Major life events	386 (10.8)
Feeling depressed	865 (24.3)
Feeling anxious	1138 (31.9)

GI: Gastrointestinal; NSAIDs: Non-steroidal anti-inflammatory drugs.

Stress and mood

A relatively high proportion of patients reported stress or mood issues: 27.3% of patients felt stressed, 10.8% of patients underwent major life events in the previous 6 months, 24.3% of patients felt depressed, and 31.9% suffered from anxiety (Table 1).

H. pylori infection

Among the 2922 patients who underwent *H. pylori* testing, 24.8% were positive (Table 1).

Initial symptoms and endoscopic findings

Data regarding initial symptoms and endoscopic findings were collected through history taking and gastroscopic reports. Eight major symptoms and their severity were evaluated. Symptom duration varied: 26.7% of patients had symptoms for less than 3 months and 34.7% had symptoms for more than 1 year (Figure 2A). The most common symptoms were epigastric pain, abdominal distension, and postprandial fullness. Symptoms and their severity were similar between non-atrophic gastritis patients and all patients (Figure 2, Supplementary Figure 2, Supplementary Tables 1 and 2). Among patients with erosions, 72.0% were diagnosed with chronic non-atrophic gastritis, 22.5% with chronic mild atrophic gastritis, and 5.5% with chronic moderate atrophic gastritis. Most patients had erosions in the gastric antrum. Slightly more than half (51.0%) had a single lesion and 67.3% had superficial flat lesions (Table 2).

Treatment patterns and efficacy

Treatment patterns are shown in Table 3. Lifestyle instructions without medication were prescribed in 10.3% of patients;

Table 2 Endoscopic findings, *n* (%)

Variable	*n* = 3563
Gastritis classification	
Chronic non-atrophy gastritis	2489 (69.9)
Chronic mild-atrophy gastritis	819 (23.0)
Chronic moderate-atrophy gastritis	255 (7.1)
Topographical pattern of erosion	
Fundus involvement	498 (14.0)
Corpus involvement	642 (18.0)
Antrum involvement	2568 (72.1)
Angle involvement	154 (4.3)
Location involvement	
Single	3292 (92.4)
Multiple	271 (7.6)
Erosive lesion number	
Single lesion	1747 (49.0)
Multiple lesions	1816 (51.0)
Erosive lesion morphology	
Superficial flat	2399 (67.3)
Protrude nodules	1164 (32.7)

Table 3 Treatment patterns of chronic erosive gastritis, *n* (%)

Variable	*n* = 3563	Variable	*n* = 3563
Treatment patterns			
Only lifestyle instructions	368 (10.3)		
Drug combinations		Drug by category	
MPA + PPI	1126 (31.6)	MPA	2380 (66.8)
MPA	392 (11.0)	PPI	2489 (69.9)
PPI	325 (9.1)	Anti-Hp	404 (11.3)
MPA + PPI + PD	302 (8.5)	H_2RA	23 (0.6)
PPI + anti-Hp	161 (4.5)	PD	608 (17.1)
MPA + PPI + anti-Hp	151 (4.2)	TCM	250 (7.0)
MPA + PD	92 (2.6)	Others	260 (7.3)
MPA + PPI + TCM	65 (1.8)		
PPI + PD	51 (1.4)		
PPI + TCM	42 (1.2)		
Others	488 (13.7)		

MPA: Mucosal protective agent; PPI: Proton pump inhibitor; PD: Prokinetic drug; Hp: *Helicobacter pylori*; TCM: Traditional Chinese medicine; H_2RA: Histamine-2 receptor antagonist.

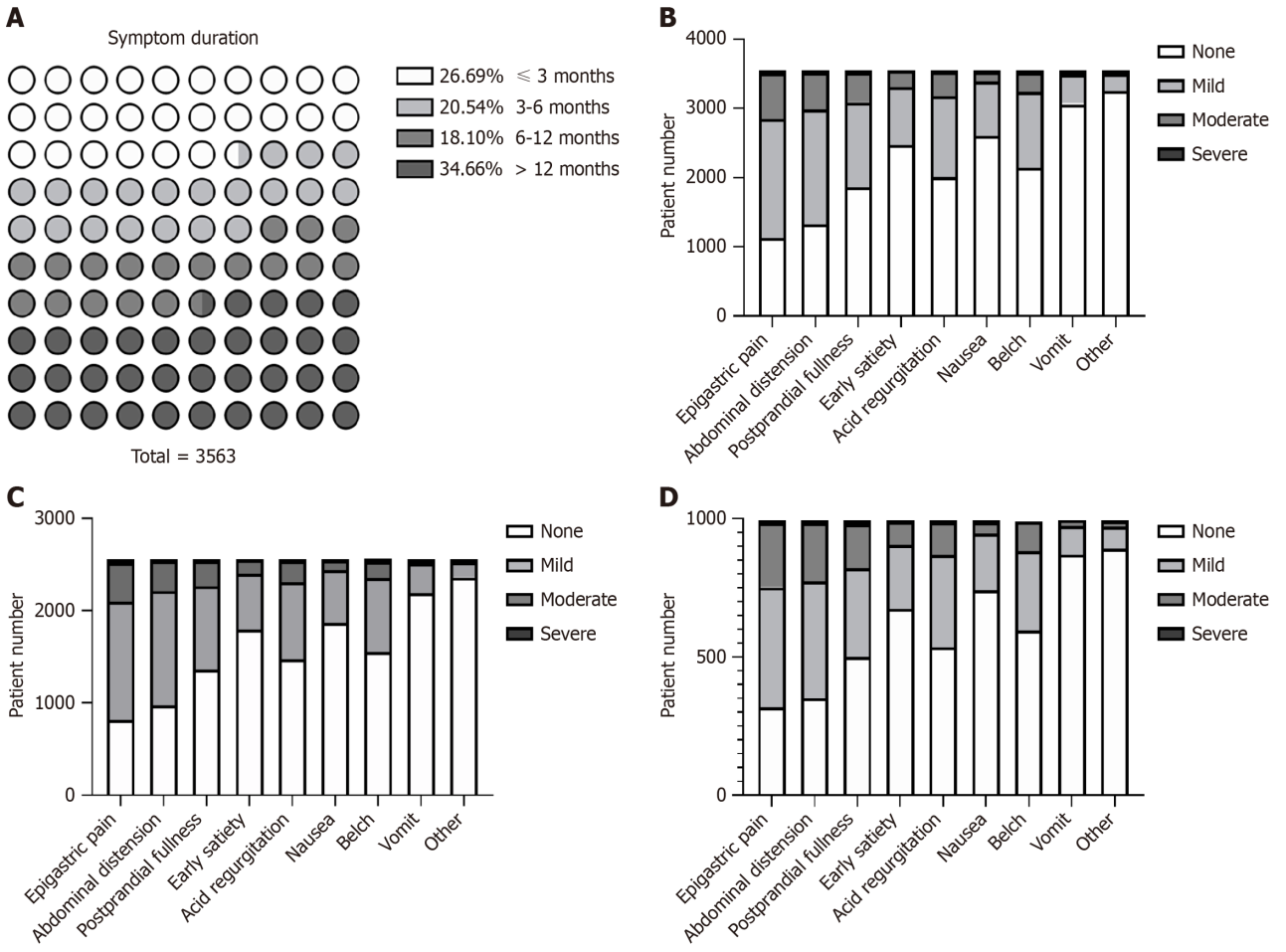

Figure 2 Initial symptoms and their severity. A: Symptom duration for all patients; B: Distribution of initial symptoms in all patients with gastritis; C: Distribution of symptoms innon-atrophic gastritis patients; D: Distribution of symptoms in atrophic gastritis patients.

89% received a drug or drug combination. The most frequently used regimens were MPA + PPI (35.24%), MPA (12.27%), PPI (10.17%), and MPA + PPI + PD (9.45%). The effectiveness of these four treatment regimens against each symptom is shown in Table 4. Table 5 shows the same with patients stratified according to *H. pylori* status. Treatment effectiveness was generally lower in *H. pylori*-positive patients. Effectiveness was higher in the MPA group than the PPI group for postprandial fullness (48.7% *vs* 32.6%), early satiety (36.7% *vs* 18.2%), nausea (34.4% *vs* 18.8%), and epigastric pain (55.9% *vs* 47.7%). Effectiveness was higher in the PPI + MPA group than the PPI group for epigastric pain (66.7% *vs* 47.7%) and acid regurgitation (41.4% *vs* 31.4%). For abdominal distension and belching, effectiveness was highest in the PPI + MPA + PD group. Comparisons between groups after adjusting for sex and age are shown in Table 6.

DISCUSSION

Previous studies have suggested that erosions are common in chronic gastritis, especially Asian patients. In a multicenter chronic gastritis survey, 42.3% of patients were found to have CEG of varying severity[3]. Another multicenter study conducted in France that enrolled 3287 patients with upper GI bleeding revealed that 11.8% of patients aged < 75 years and 13.9% of patients aged > 75 years had gastroduodenal erosions[8]. However, there is currently insufficient data and evidence regarding CEG risk factors, symptoms, endoscopic and pathologic characteristics, and treatment strategies[15]. As a result, treatment patterns vary extensively. Moreover, evidence regarding CEG treatment outcomes is limited, especially regarding symptom improvement. Therefore, we conducted this study, which is the first real-world observational and non-interventional study in China to explore lifestyle characteristics, symptoms, endoscopic findings, treatment patterns, and short-term outcomes in patients with CEG.

In regard to patient characteristics, CEG did not show a sex predominance. Furthermore, contrary to our expectations, more than half of the patients with erosions had no history of alcohol consumption or smoking, and more than 60.0% ate a regular diet and had normal or healthy diet preferences. However, a considerable proportion of patients exhibited mood problems. Specifically, 27.3% of patients felt stressed, 24.3% felt depressed, and 31.9% felt anxious, which suggested that mood disturbances may play a role in the development of erosions. Treatment of stress-induced gastritis and gastric ulcers in the intensive care unit setting has been discussed previously[11]; however, the relationship between daily life stress and CEG has not been fully ascertained. Our results and those of previous studies suggest that CEG is a

Table 4 Effectiveness of the four most frequently used treatment regimens against the various symptoms, *n* (%)

	MPA effectiveness, *n* = 3563	PPI effectiveness, *n* = 3563	MPA + PPI effectiveness, *n* = 3563	MPA + PPI + PD effectiveness, *n* = 3563	*P* value
Epigastric pain	219 (55.9)	155 (47.7)	751 (66.7)	207 (68.5)	< 0.001
Abdominal distension	212 (54.1)	158 (48.6)	608 (54.0)	194 (64.2)	0.001
Postprandial fullness	191 (48.7)	106 (32.6)	455 (40.4)	156 (51.7)	< 0.001
Early satiety	144 (36.7)	59 (18.2)	309 (27.4)	103 (34.1)	< 0.001
Acid regurgitation	159 (40.6)	102 (31.4)	466 (41.4)	164 (54.3)	< 0.001
Nausea	135 (34.4)	61 (18.8)	261 (23.2)	86 (28.5)	< 0.001
Belch	168 (42.9)	88 (27.1)	355 (31.5)	152 (50.3)	< 0.001
Vomiting	87 (22.2)	38 (11.7)	140 (12.4)	43 (14.2)	< 0.001
Others	72 (18.4)	14 (4.3)	42 (3.7)	21 (7.0)	< 0.001

MPA: Mucosal protective agent; PPI: Proton pump inhibitor; PD: Prokinetic drug.

Table 5 Treatment effectiveness with patients stratified according to *Helicobacter pylori* status, *n* (%)

	MPA effectiveness, *n* = 3563		PPI effectiveness, *n* = 3563		MPA + PPI effectiveness, *n* = 3563		MPA + PPI + PD effectiveness, *n* = 3563		*P* value
	Hp (+)	Hp (-)	Hp (+)	Hp (-)	Hp (+)	Hp (-)	Hp (+)	Hp (-)	
Epigastric pain	26 (47.3)	148 (56.5)	27 (51.9)	86 (42.8)	91 (67.9)	527 (66.5)	10 (47.6)	161 (70.3)	0
Abdominal distension	24 (43.6)	143 (54.6)	29 (55.8)	99 (49.3)	74 (55.2)	424 (53.5)	15 (71.4)	141 (61.6)	0.092
Postprandial fullness	21 (38.2)	135 (51.5)	22 (42.3)	63 (31.3)	55 (41.0)	323 (40.7)	8 (38.1)	118 (51.5)	0
Early satiety	19 (34.5)	102 (38.9)	15 (28.8)	31 (15.4)	36 (26.9)	230 (29.0)	6 (28.6)	83 (36.2)	0
Acid regurgitation	29 (52.7)	102 (38.9)	25 (48.1)	61 (30.3)	38 (28.4)	340 (42.9)	10 (47.6)	127 (55.5)	0
Nausea	24 (43.6)	88 (33.6)	15 (28.8)	36 (17.9)	28 (20.9)	190 (24.0)	2 (9.5)	73 (31.9)	0
Belch	28 (50.9)	115 (43.9)	21 (40.4)	50 (24.9)	37 (27.6)	259 (32.7)	4 (19.0)	118 (51.5)	0
Vomiting	16 (29.1)	54 (20.6)	11 (21.2)	18 (9.0)	17 (12.7)	103 (13.0)	1 (4.8)	38 (16.6)	0
Others	21 (38.2)	135 (51.5)	22 (42.3)	63 (31.3)	55 (41.0)	323 (40.7)	8 (38.1)	118 (51.5)	0

MPA: Mucosal protective agent; PPI: Proton pump inhibitor; PD: Prokinetic drug; Hp: *Helicobacter pylori*.

multifactorial disease which is influenced by lifestyle, obesity, infection, emotion, and mood. The correlation between a single factor, such as dietary habits, and disease incidence remains unclear and further studies are warranted.

The FUTURE study revealed that among patients with chronic symptomatic gastritis, 48.2% experienced heartburn, 68.0% had epigastralgia, and 67.5% had epigastric fullness. These were the most common symptoms[16]. In our study, the most common symptom was epigastric pain (68.0%), followed by abdominal distension (62.6%), postprandial fullness (47.5%), acid regurgitation (43.4%), belching (39.6%), early satiety (30.5%), nausea (26.7%), and vomiting (13.9%); most of these were mild or moderate in severity. To further clarify the symptom profile of erosive gastritis, we compared the ratios of different symptoms in all patients, which were comparable between those with chronic non-atrophic gastritis and those with chronic atrophic gastritis. Epigastralgia, epigastric burning, postprandial epigastric fullness, and early satiation are typical symptoms of functional dyspepsia[17]. The symptoms of CEG are non-specific and similar to those of dyspepsia. Differentiating these two diseases is crucial. A recent meta-analysis indicated that the prevalence of functional dyspepsia is higher in Western countries than in Asian countries[18]. Moreover, questions have been raised regarding the inconsistent symptom clusters for functional GI disorders in China[19]. Thus, we speculate that the lack of consensus poses difficulties in identifying CEG, which may contribute to the disparate prevalence between Asian and Western countries. Previous studies have demonstrated that the prevalence of CEG is not considered low in China and other Asian countries, which suggests that gastroscopy for patients with the above symptoms may help physicians detect and diagnose CEG in Asian patients.

Table 6 Treatment response comparisons (*n* = 3563)

	PPI *vs* MPA		PPI *vs* MPA + PPI		PPI *vs* MPA + PPI + PD	
	OR (95%WCL)	*P* value	OR (95%WCL)	*P* value	OR (95%WCL)	*P* value
Epigastric pain	0.73 (0.54-0.98)	0.039	0.46 (0.36-0.59)	< 0.001	0.42 (0.30-0.58)	< 0.001
Abdominal distension	0.81 (0.60-1.09)	0.162	0.81 (0.63-1.04)	0.091	0.53 (0.38-0.73)	< 0.001
Postprandial fullness	0.51 (0.38-0.69)	< 0.001	0.71 (0.55-0.93)	0.011	0.45 (0.33-0.62)	< 0.001
Early satiety	0.38 (0.27-0.54)	< 0.001	0.59 (0.43-0.80)	< 0.001	0.42 (0.29-0.61)	< 0.001
Acid regurgitation	0.68 (0.50-0.93)	0.016	0.65 (0.50-0.85)	0.001	0.38 (0.28-0.53)	< 0.001
Nausea	0.44 (0.31-0.63)	< 0.001	0.77 (0.57-1.06)	0.106	0.57 (0.39-0.83)	0.004
Belch	0.50 (0.37-0.69)	< 0.001	0.81 (0.61-1.07)	0.133	0.36 (0.26-0.51)	< 0.001
Vomiting	0.47 (0.31-0.71)	< 0.001	0.94 (0.64-1.37)	0.730	0.79 (0.49-1.26)	0.322
Others	0.21 (0.11-0.37)	< 0.001	1.19 (0.64-2.22)	0.578	0.61 (0.31-1.23)	0.168

MPA: Mucosal protective agent; PPI: Proton pump inhibitor; PD: Prokinetic drug; WCL: Weighted case load.

Current mainstream treatment options for CEG include lifestyle guidance, MPAs, PPIs, and other symptomatic treatments. Several studies have demonstrated that geranylgeranyl acetone treatment is more effective than cimetidine for chronic gastritis-associated erosions and petechial hemorrhage[20]. In addition, rebamipide had a stronger suppressing effect on mucosal inflammation and provided greater symptom relief in CEG patients than sucralfate[10]. Furthermore, famotidine is effective in relieving abdominal symptoms in chronic symptomatic gastritis[16]. For *H. pylori*-associated gastritis, anti-*H. pylori* therapy is recommended and accepted by physicians[21,22]. However, a significant number of patients in our study were not treated using anti-*H. pylori* regimens and *H. pylori*-positive patients consistently exhibited lower symptom relief rates. Treatment of CEG varies across different centers[10,23], which is partially because of a lack of consensus and lack of treatment guidelines. However, high-level evidence evaluating the efficacy of existing treatment regimens is currently limited. In our study, PPIs and MPAs were used by 69.9% and 66.8% of patients, respectively, and 31.6% received combination treatment. Further studies comparing relief of the various symptoms between PPI, MPA, PPI + MPA, and PPI + MPA + PD may provide valuable information for selecting the most appropriate drug regimen. If epigastric pain is the predominant symptom, a MPA + PPI may provide a better response than a PPI or MPA alone. If abdominal distension is the predominant symptom, MPA may provide a slightly superior response than PPI; however, combining the two did not offer an additional benefit. Nonetheless, adding a PD to a combination of an MPA and a PPI seemed to provide greater symptom relief. If postprandial fullness, early satiety, or nausea are the most notable symptoms, the use of an MPA may be the optimal choice. When symptoms are predominantly related to acid reflux, a PPI or PPI + MPA are more effective. For patients whose predominant complaint is dyspepsia, treatment with an MPA is recommended; adding a PD may provide a better response in some cases. Our results demonstrate that individualized treatment based on symptom profile is crucial for patients with CEG.

This study is subject to several limitations. First, the absence of a control group comprising healthy individuals limits our capacity to robustly identify risk factors. Second, follow-up was only a month. While this timeframe is adequate for preliminary assessment of therapeutic responses, it is inadequate to provide a comprehensive understanding of long-term disease progression or sustainability of treatment effects. It is imperative for future studies to incorporate longer follow-up periods to thoroughly evaluate the long-term impact of treatment on symptoms, endoscopic findings, and histopathological changes and identify any late-onset adverse effects or diminished effectiveness.

CONCLUSION

We conducted the first multicenter real-world study to assess clinical characteristics, treatment patterns, and short-term outcomes in patients with CEG in China. The development of CEG is likely a multifactorial process. Epigastric pain, abdominal distension, and postprandial fullness were the most common initial symptoms. CEG is relatively common in Asians and clinical symptoms are non-specific. Therefore, gastroscopy may be valuable for CEG detection and diagnosis. Our comparisons of symptom relief between different treatment strategies should provide useful information to fellow clinicians regarding treatment selection. Patients with acid reflux symptoms may respond best to a PPI or PPI + MPA, whereas an MPA may be more effective for those with dyspepsia; in some cases, combination therapy with a PD may also be effective. Patients testing positive for *H. pylori* experience better symptom relief when anti-H pylori therapy is used. Taken together, our study highlights the need to individualize CEG treatment based on symptom profile.

ARTICLE HIGHLIGHTS

Research background

This multicenter observational study delves into chronic erosive gastritis (CEG) in China, a condition whose clinical characteristics and treatment approaches have been inadequately explored. It illuminates the commonality of CEG and its varied clinical presentations, emphasizing the necessity of a better understanding of its treatment patterns and short-term outcomes.

Research motivation

Addressing the pressing need for clarity in the clinical management of CEG, the study seeks to demystify the disease's symptomatology, lifestyle influences, endoscopic findings, and treatment efficacies. It aspires to enhance the understanding of CEG's multifactorial nature and guide more effective, personalized treatment strategies.

Research objectives

To explore the clinical characteristics, treatment patterns, and short-term outcomes in CEG patients in China.

Research methods

Employing a prospective observational cohort approach, the study involved patients with chronic non-atrophic or mild-to-moderate atrophic gastritis with erosions. It combined questionnaires, endoscopic and pathological evaluations, and follow-up assessments to evaluate treatment responses and lifestyle characteristics, offering a comprehensive view of CEG's clinical landscape.

Research results

The study reveals the predominance of symptoms like epigastric pain, abdominal distension, and postprandial fullness in CEG, with treatments like mucosal protective agents and proton pump inhibitors showing varying effectiveness. It underscores the non-specific nature of CEG symptoms and the importance of gastroscopy in diagnosis, especially in Asian populations.

Research conclusions

This investigation proposes new insights into CEG, highlighting its multifactorial etiology influenced by lifestyle, obesity, infection, and emotional factors. The study's findings advocate for individualized treatment strategies based on specific symptom profiles, enhancing treatment efficacy.

Research perspectives

Future research should focus on long-term outcomes of CEG treatments, the sustainability of therapeutic effects, and the identification of potential late-onset side effects. Extending the understanding of CEG's long-term progression and refining treatment approaches are crucial steps forward.

FOOTNOTES

Author contributions: Li JN, Yang YY, Xu GF, Wang CD, Wang XZ, Wang CH, Zhang BY, and Jiang HX contributed to the conception and design of the study; Yang YY, Xu GF, Wang CD, Xiong H, Wang XZ, Wang CH, Zhang BY, Jiang HX, Sun J, Xu Y, Yang YY, Xu GF, Wang CD, Xiong H, Wang XZ, Wang CH, Zhang BY, Jiang HX, Sun J, Xu Y, Zhang LJ, Zheng HX, Xing XB, Wang LJ, Zuo XL, Ding SG, Lin R, Chen CX, Wang XW, and Li JN performed the data collection; Yang YY, Li KM, Li JN, Xu Y, Wang LJ, Ding SG, and Lin R performed the data analysis and interpretation; Yang YY, Li KM, and Li JN performed the statistical analysis; Yang YY and Li KM wrote the first draft of the manuscript; Wang CD, Xiong H, Wang XZ, Wang CH, Zhang BY, Jiang HX, Sun J, Xu Y, Wang LJ, Ding SG, and Lin R revised the manuscript; Li JN and Yang YY contributed to funding acquisition; and all authors read and approved the final manuscript.

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