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A comparison of risk factors and clinical presentations of the young and elderly individuals with Barrett's esophagus

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Abstract

Background and Aim: The risk factors of Barrett's esophagus (BE) include advancing age, male gender, obesity, and long-term reflux symptom. The aim of this study was to analyze the differences in risk factors and presentation of symptoms between young and elderly Chinese patients with BE.

Methods: Data from VGHTC were prospectively collected from October 2012 to December 2014. The data of young (<60 years old) and elderly (≥ 60 years old) cases were collected and compared.

Results: The 67 enrolled subjects comprised 36 (53.7%) young patients and 31 (46.3%) elderly patients. Most BE subjects were male (63.6~77.4%) and had short-segment BE (94.4~93.5%). The waist circumference, BMI, and prevalence of obesity were similar between the two groups. A non-significantly higher rate of hiatal hernia was noted in the elderly cases (58.1% vs. 38.9%, $P=0.117$). Two young cases (5.6%) and two elderly cases (6.5%) had dysplasia. One elderly subject (3.2%) had adenocarcinoma. Most patients had typical reflux symptoms (58.1%~61.1%), and cigarette smoking was more prevalent in elderly patients. SF-12 scores in the two groups were similar.

Conclusion: Young BE patients had similar presentations to those of elderly BE patients. Further study is needed.

Keywords: Age; Barrett's esophagus; Young patients

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Background

Barrett's esophagus (BE) is defined as the appearance of intestinal metaplasia (IM) of the

esophageal squamous epithelium, and its risk factors include advancing age, male gender, obesity, and long-term gastroesophageal reflux disease (GERD) [1]. Population studies have

found the prevalence rate of BE is 1-2%, but in patients with GERD symptoms, prevalence of BE ranges from 10% to 18% [2,3]. BE is known to be associated with old age, and some studies have reported a higher proportion of females than males among elderly BE patients [4-6]. However, in clinical practice, some subjects present with BE at a relatively young age. The aim of this study was to analyze differences in risk factors and presentation of symptoms between young and elderly Chinese patients with BE.

Methods

Data from subjects with BE who visited the Medical Screening Center at Taichung Veterans General Hospital were prospectively collected from October 2012 to December 2014. The general data of enrolled patients, including age, gender, body weight, body mass index (BMI), and waist circumference were recorded. All patients underwent an open-access transoral upper gastrointestinal (UGI) endoscopy using white light and high-resolution narrow band imaging (NBI), and a four-quadrant tissue biopsy was taken according to AGA recommendations [7]. BE was diagnosed by typical IM pattern. The endoscopic findings, including hiatal hernia, erosive esophagitis (EE), short segment BE (SSBE, extending < 3 cm into the esophagus) or long segment BE (LSBE, extending \geq 3 cm into the esophagus), and pathologic dysplasia of BE tissue were collected. The exclusion criteria included total esophagectomy, severe cardiopulmonary deficiency, malignancy, or other conditions that would preclude the use of UGI scope.

All of the enrolled cases were asked to complete questionnaires about lifestyle habits, reflux symptoms, and generic quality of life (short form-12, SF-12). The lifestyle habits included consumption of alcohol, tea, and coffee, as well as cigarette smoking. Reflux symptoms included typical symptoms, such as acid regurgitation or heartburn sensation, and

atypical symptoms, such as sore throat, lump sensation, or chronic cough. In this study, patients were deemed to be positive for the above symptoms when the frequency of occurrence was 3 or more times a week. The SF12 is a multipurpose short-form survey containing 12 items selected from the SF36 Health Survey. It measures a patient's health-related quality of life based on self-reported information about mental and physical well-being. Patients were divided into two groups according to age: younger than 60 years old (young group) and 60 years old or older (elderly group). The characteristics of the two groups were compared.

Data are expressed as the standard deviation of mean for each of the measured parameters. Gender and positive rate of each stratified group are expressed as a percentage of the total patient number. Statistical comparisons were made using Pearson's chi-square test to compare the effects of gender and positive rate of each stratified group. Independent t test was used to analyze body weight, BMI, and waist circumference. A p-value below 0.05 was considered statistically significant.

Results

Among the 67 enrolled subjects in our study, the average age was 59.68 ± 15.19 years old. There were 36 (53.7%) patients in the young group and 31 (46.3%) patients in the elderly group. The general data are shown in Table 1. The mean ages of the young and elderly group were 52.97 and 77.52 years old, respectively. Male predominance was noted in both groups (63.6% vs. 77.4%, $P=0.228$). The levels of waist circumference (88.54 vs. 89.17 cm, $P=0.344$), BMI (24.98 vs. 24.21 kg/m²), and prevalence of obesity ($BMI \geq 24$ kg/m²) (52.8% vs. 58.1%, $P=0.822$) were similar in the two groups.

Table 1: The general data of the young and elderly group.

Table1	Young group (N=36)				Elderly group (N=31)				P-value
	M	± SD	N	%	M	±SD	N	%	
Age (years)	52.97	± 9.09 ±9.99 ±13.48 ±4.54			77.52	±6.21 ±9.59 ±10.79 ±3.68			0.001 ^a
Gender (male)			23	-63.90%			24	-77.40%	0.228 ^b
Waist (cm)	87.67				89.31				0.344 ^a
BW (kg)	68.31				63.11				0.089 ^a
BMI (kg/m ²)	24.98				24.41				0.576 ^a
Obesity*			19	-52.80%			18	-58.10%	0.822 ^b

P-values were analyzed with t-test ^a; Pearson's Chi-square test ^b.
 Obesity is defined as BMI ≥24 kg/m²
 Abbreviations: BMI, body mass index; BW, body weight; M, mean; N, number of patients; SD, standard derivation.

The endoscopic and pathologic appearance of BE of the two groups are displayed in Table 2. Most enrolled subjects had SSBE (94.4% vs. 93.5%, P=1.000). The rates of EE in the two groups were similar (33.3% vs. 32.3%, P=0.593). The subjects in the elderly group had a non-significantly higher rate of hiatal hernia than that in the young group (58.1% vs. 38.9%, P=0.117). Regarding the pathologic findings of BE, two young patients (5.6%) and two elderly patients (6.5%) had lower grade dysplasia (LGD). One elderly individual (3.2%) had adenocarcinoma. These differences were all non-significant.

The numbers of positive reflux symptoms are listed in Table 3. Among all enrolled individuals, 20 young subjects (55.6%) and 16 elderly subjects (51.6%) had acid regurgitation; 11 young cases (30.6%) and 9 elderly cases (19.4%) had heartburn sensation. There were 14 patients (38.9%) in the young group and 13 patients (41.9%) in the elderly groups who did not have any typical reflux symptoms. Among cases with atypical reflux symptoms, there were greater prevalence rates of sore throat (27.8%

vs. 16.1%) and lump sensation (55.6% vs. 32.3%) among young patients than among elderly patients, although these differences did not reach statistical significance.

Patients' lifestyle habits, including consumption of alcohol, tea, and coffee drinking, as well as cigarette smoking, are also shown in Table 3. A significantly higher prevalence of smoking was found among elderly patients compared with younger patients (58.1% vs. 30.6%, P=0.023). There were no significant differences in any of the other lifestyle habits between the two groups.

Quality of life scores, measured by SF-12, were recorded and are listed in Table 5. The physical component summary (PCS) scores of the young and elderly patients were 43.91±10.08 and 44.42±8.98, respectively. The mental component summary (MCS) scores were 45.60±10.79 and 45.59±10.25 in young and elderly subjects, respectively. The differences between these two groups were non-significant (PCS, P=0.757; MCS, P=0.996).

Table 2: The endoscopic and pathologic appearance of the young and elderly group.

Table 2	Young (N=36)		Elderly (N=31)		P-value
	N	%	N	%	
BE length					1
SSBE	34	-94.40%	29	-93.50%	
LSBE	2	-5.60%	2	-6.50%	
Hiatal hernia	14	-38.90%	18	-58.10%	0.117
Erosive esophagitis					0.593
Nil	24	-66.70%	21	-67.70%	
LA Gr. A/B	12	-33.30%	8	-25.90%	
LA Gr. C/D	0		2	-6.40%	
Pathologic findings					1
Non-dysplasia	34	-94.40%	28	-90.30%	
Dysplasia	2	-5.60%	2	-6.50%	
Adenocarcinoma	0		1	-3.20%	

P-values were analyzed Pearson's Chi-square test.

Abbreviations: BE, Barrett's esophagus; LA Gr., Los Angeles classification grade; LSBE, long segment Barrett's esophagus; M, mean; N, number of patients; SD: standard derivation; SSBE, short segment Barrett's esophagus

Table 3: The appearance of reflux symptoms and lifestyle habits of the young and elderly group.

Table 3	Young (N=36)		Elderly (N=31)		P-value
	N	%	N	%	
Typical reflux syndromes					
Acid regurgitation	20	-55.60%	16	-51.60%	0.747
Heartburn	11	-30.60%	6	-19.40%	0.293
Acid regurgitation or heartburn	22	-61.10%	18	-58.10%	0.8
Nil	14	-38.90%	13	-41.90%	
Atypical reflux syndromes					
Sorethroat	10	-27.80%	5	-16.10%	0.254
Lump	20	-55.60%	10	-32.30%	0.056
Cough	5	-13.90%	5	-16.10%	0.798
Lifestyle habits					
Alcohol	10	-27.80%	13	-41.90%	0.224
Tea	14	-40.00%	8	-27.60%	0.298
Coffee	10	-27.80%	11	-35.50%	0.498
Smoking	11	-30.60%	18	-58.10%	0.023

P-values were analyzed with Pearson's Chi-square test.

Abbreviations: M, mean; N, number of patients; SD, standard derivation.

Discussion

BE is defined as a metaplastic change from squamous epithelium to columnar epithelium in the distal esophagus, and is considered to be a pre-malignant disease.¹ Typically, BE is more frequently found in male and obese individuals [8-10]. Our results are consistent with these findings, with male predominance (63.6% vs. 77.4%) and a higher rate of obesity (52.8% vs. 58.1%) in both the young group and the elderly group. There were no significant differences between the two groups.

The majority of BE patients in Asian countries have the short segment type [3], and this was also observed in our study population among both young (94.4%) and elderly (93.5%) patients. Hiatus hernia is considered a major cause of severe reflux and is strongly associated with BE [11]. Our present results showed a higher rate of hiatal hernia in the elderly group (58.1%) than that in the young group (38.9%). However, the impact of age on hiatal hernia in BE patients was not significant ($P=0.117$), and the higher rate of hiatal hernia in elderly individuals might just be due to normal variation.

There has been an increasing interest in BE due to its progression to dysplasia or adenocarcinoma [1]. Our results failed to find any differences in detection of dysplastic tissue between the young and elderly groups. One reason might be the lower incidences of dysplasia and adenocarcinoma in Eastern countries compared with those in Western countries. For example, only four cases with dysplasia and one with adenocarcinoma were discovered in our patient population.

Symptoms of GERD, such as heartburn or acid regurgitation, have been associated with an increased risk of BE [12,13]. Nonetheless, studies conducted in Sweden and Italy suggested that approximately 40% of individuals found to have BE had no reflux symptoms [3,14]. Our study found more than

half (58.1%~61.1%) of the BE cases reported symptoms of acid regurgitation or heartburn, but some subjects (38.9%~41.9%) did not have any typical reflux symptoms. Interestingly, young subjects were more likely to have atypical reflux symptoms, including sore throat and lump sensation, compared with their elderly counterparts, although differences were not significant.

Some lifestyle habits are considered to be risk factors for BE. Earlier studies reported a higher prevalence of BE in patients with certain lifestyle habits, such as alcohol drinking and cigarette smoking [3,15]. Our results found similar lifestyle habits between the young and elderly BE patients, with the exception of cigarette smoking, which was more prevalent of smoking in the latter group.

Individuals with BE reported worse health-related quality of life compared with that of the general population [16]. In a previous study that used the SF-36 questionnaire, the reported PCS and MCS scores for BE patients were 42.6 and 41.8, respectively. Another study reported PCS and MCS scores of 46.2 and 51.7, respectively [16,17]. Our study, SF-12 scores were similar between the young group and the elderly group, for both PCS (mean 43.91 vs. 45.60, $P=0.757$) and MCS (mean 44.42 vs. 45.59, $P=0.996$).

There were several limitations in our study. First, this study was a hospital-based investigation conducted in a single center. Selection bias might have existed and thus these patients may not have been representative of the general population. Second, use of antisecretory agents for reflux symptoms was not determined. The rate of GERD may therefore have been underestimated. Third, the questionnaires of lifestyle habits and reflux symptoms were obtained through self-reporting, and thus these data likely contained uncontrolled errors. Further community-based research with more variables is needed.

In conclusion, in our studied population, we found that young and elderly BE patients had

similar risk factors and clinical presentations. Further study is needed to investigate the pathophysiology of BE in young individuals.

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