

Diagnostic Yield of Upper Gastrointestinal Endoscopy with reference to Barrett's Esophagus in a Tertiary Care Center in India

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ABSTRACT

Background: Upper gastrointestinal (GI) endoscopy is a common diagnostic procedure that plays central role in gastroenterology. It is a safe, accurate open access investigation for evaluation of wide range of upper GI lesions.

The study was aimed to know the diagnostic yield of upper GI endoscopy in patients with GI symptoms. We focused to investigate the prevalence, clinical features, risk factors and endoscopic findings of Barrett's Esophagus (BE) in the studied cohort.

Material and methods: A total of 3000 subjects underwent diagnostic upper GI endoscopy over last 1 year with variety of GI symptoms and indications. Demographic data including age, sex, personal habits, past medical history, comorbidities were recorded.

Results: Mean age of the patients is 51.6+/- 32.8 years ranging from 13 to 81 years. 63% were male and 37% were female. Out of 3000 patients, 63 patients had BE (2.1%) with symptoms of Gastro Esophageal Reflux Disease (GERD). 65% of BE subjects were smokers, 25% alcoholic and 32% were tobacco chewers.

Out of 63 patients with BE on endoscopic evaluation, 51 had non-dysplastic BE while 10 had low grade and 2 had high-grade dysplasia. 5 of BE patients had hiatus hernia. We diagnosed BE on macroscopic examination during endoscopy and it was found to be non-dysplastic type of BE.

Discussion:

Conservative management was offered to the patients with non-dysplastic BE. It involved symptomatic treatment and periodic endoscopic surveillance to assess the progression of the disease. As BE is a predisposing factor for Esophageal Adenocarcinoma (EAC), early identification of high risk individuals and implementation of preventive strategy will help to reduce prevalence of EAC.

Conclusion:

There is 2.1% frequency of BE among GI symptomatic patients. GERD, smoking, tobacco and alcohol consumption are identified risk factors in our studied population.

Introduction

Upper gastrointestinal (GI) endoscopy-Esophago Gastroduo Denoscopy (EGD) is a common diagnostic procedure that plays central role in the practice of gastroenterology. It remains the first line of diagnostic modality for evaluation of GI disorders. It is a safe, accurate open access investigation for evaluation of wide range of upper GI lesions. EGD is commonly indicated for heartburn, recurrent emesis, dyspepsia, dysphagia, non-cardiac chest pain, hematemesis and screening for upper GI malignancies. Barrett's esophagus is one of the pathological entities encountered by the gastroenterologist during EGD. On visual inspection, the endoscopist can identify change in the lining of esophageal epithelium and further evaluate it to confirm the diagnosis of BE histopathologically. It is considered as a precancerous lesion, which may progress to esophageal carcinoma.

According to guidelines of American College of Gastroenterology, Barrett's Esophagus (BE) is defined as a change in the distal esophageal epithelium of any length that can be recognized as columnar type mucosa at endoscopy and is confirmed to have intestinal metaplasia by biopsy of the tubular esophagus [1]. It is a premalignant condition-affecting esophagus that predisposes person towards carcinogenesis. Worldwide, widely ranging data about varied prevalence of BE has been reported. It could be due to differences in standardized protocols for biopsy, different endoscopic and pathological diagnostic criteria. In India, few studies reported its prevalence ranging from 2.6-23%. It is found to be 1.6% in general population and 10% of those undergoing EGD for upper GI symptoms [2].

Risk factors associated with BE are age, erosive reflux esophagitis, smoking, hiatus hernia, use of alcohol. It is seen commonly in males, usually in sixth decade of life [3]. Gastroesophageal Reflux Disease (GERD) is the most important risk factor for BE. It is a clinical condition due to reflux of stomach content into esophagus causing chronic inflammation leading to trouble symptoms or complications or both. Patients typically present with history of retrosternal burning or regurgitation and get

relief on antacids secretory medications. Onset of GERD at young age with history of long duration of symptoms is risk factor for BE. Limited data is available in literature about the profile and prevalence of BE in India. Present study aimed to study the diagnostic yield of upper GI endoscopy with reference to BE.

Material and Methods

Patients undergoing EGD for upper gastrointestinal symptoms from period January 2015 to March 2016 were enrolled in the study. A total of 3000 subjects underwent diagnostic upper GI endoscopy for variety of GI symptoms and indications. Demographic data including age, sex, personal habits, past medical history and comorbidities were recorded. In detail history about upper GI symptoms and medications received was recorded from every patient. All patients underwent EGD as per the protocol of our institute, which is based on the standard guidelines. Informed consents of all participants were obtained. During the procedure, endoscopic findings were recorded. During visual inspection, findings of changes of BE were confirmed by Narrow Band Imaging (NBI). We studied mucosal pattern, vascular pattern and presence of abnormal blood vessels in the segment of BE.

Results

Mean age of the patients undergoing EGD was 51.6 ± 32.8 years ranging from 13 to 81 years. 63% were male and 37% were female. Indications for endoscopic examination were retrosternal burning pain (76%), dysphagia (21%), nausea and vomiting (39%), pain in abdomen (13%) and other non-specific symptoms among 18% of the patients.

Out of 3000 patients, 63 patients had BE (2.1%) with mean age 57.89 ± 7.65 years. Out of 63 cases of BE, 45 (71.42%) were male and 18 (28.58%) were female. Mean age of men with BE was 58.7 ± 6.9 years, while mean age of women with BE was 63.42 ± 5.7 years. Table 1 shows the prevalence of BE by age group and sex.

All the cases presented with the symptoms of Gastroesophageal Reflux Disease (GERD). 65% of BE subjects were smokers, 25% alcoholic and 32% were

tobacco chewers. Out of 63 patients with BE, on endoscopic evaluation, 51 had non-dysplastic BE while 10 had low grade and 2 had high-grade dysplasia. Dysplasia was found during surveillance gastroscopy. 5 of BE patients (8%) had hiatus hernia. Clinical and endoscopic profile of the subjects with BE has been represented in table 2.

We diagnosed BE on macroscopic examination during NBI endoscopy and it was found to be non-dysplastic type of BE.

Table 1: Age and sex wise distribution of BE

	20-30 years	31-40 years	41-50 years	51-60 years	>61 years	Total
Men	01 (2.2%)	02 (4.4%)	6 (13.2%)	23 (50.6%)	13 (28.6%)	45
Women	00	03 (16.6%)	4 (22%)	7 (38.5%)	4 (22%)	18
Total	01 (1.6%)	05 (8%)	10 (16%)	30 (48%)	17 (27.2%)	63

Table 2: Clinical and endoscopic profile of the subjects with BE

	Characteristics	Number	Percentage (%)
	Smoking	41	65
	Alcoholism	16	25
	Tobacco chewers	20	32
	Obesity (BMI>25Kg/m ²)	05	08
	GERD	100	100
	Non-dysplastic BE	51	81
	Low-grade dysplasia	10	16
	High-grade dysplasia	02	03
	Hiatus hernia	05	08

Discussion

Clinically BE is one of the important condition as it is considered to be premalignant lesion of esophageal adenocarcinoma. Persons with BE are at 30 fold higher risk for development of adenocarcinoma in comparison with general population [4]. There is replacement of normal squamous epithelium by columnar-lined epithelium and specialized intestinal metaplasia. GERD is a strong risk factor for BE and presence of BE is a link between GERD and esophageal adenocarcinoma. BE is thought to be the result of acid-induced injury [5]. Risk of progression from BE to cancer is estimated to be approximately 0.12-0.5% per year [6].

In our study, we observed 2.1% prevalence of BE in patients undergoing upper GI endoscopy with male

predominance. Smoking is the main associated risk factor in our cases (65%). Mathew P et al investigated the frequency and risk factors of BE in Indian patients with GERD. Out of 278 cases of GERD, 16.54% had columnar mucosa and 8.99% had specialized intestinal metaplasia.

They identified the risk factors for BE- age above 45 years (OR 2.63 CI 1.03-6.71), hiatus hernia (OR; 3.95:CI: 1.24-12.56) and history of eructation (OR 2.28:CI 1.11-4.66) [7].

Study from China documented 1% prevalence of BE among 2022 patients underwent upper gastro endoscopy. Their prevalence is lower than that of developed countries also. Age (OR 1.03 95%; CI 1.00-1.07) and reflux esophagitis (OR 4.44 95% CI: 1.22-16.17) were the risk factors associated with BE [8]. H.W. Wang et al retrospectively analyzed 425 patients of BE and reported BE associated esophageal adenocarcinoma among old men [9].

Relatively BE is not common condition (0.06 to 19.9% prevalence) in most of Asian countries. Wide variation in the reported prevalence may be due to differences in

study population included, study design and protocols of endoscopic biopsies used [10]. One of Korean study documented 0.22% prevalence of BE with great predominance among male. Old age, smoking and frequent regurgitation were identified as possible risk factors in this population [11]. Di Caro et al observed strong association of abdominal obesity (OR 3.08) with BE and dysplasia [12]. Among obese people, hiatus hernia is more prevalent condition and positively associated with BE. We found hiatus hernia among 8% of BE cases. In comparison to previous reports, our population of BE has relatively low prevalence of hiatus hernia. One possible explanation could be absence of obesity among cases of BE (Average Body Mass Index-22.76 \pm 2.31 kg/m²).

Salpekar et al diagnosed 9 cases of BE by endoscopic brush cytology, among 105 patients who underwent upper GI scopy with upper GI symptoms. Retrosternal burning pain and regurgitation were the chief complaints in these cases and they represented one to two decade earlier than their malignant counterparts [13]. R Wani et al reported 2.38% prevalence of biopsy proven BE and 14.81% of CLE among North Indians with symptoms of GERD [2]. Prevalence of GERD is high among Indians but compared to it, prevalence of BE is lower [14]. Our all subjects of BE presented with symptoms of GERD.

Conservative management was offered to the patients with non-dysplastic BE. It involved symptomatic treatment and periodic endoscopic surveillance to assess the progression of the disease. 2 cases of BE with high-grade dysplasia were managed with ablation therapy at the time of diagnosis. 10 cases of low-grade dysplasia are still under endoscopic surveillance with regular follow up at our center.

As BE is a predisposing factor for Esophageal Adenocarcinoma (EAC), early identification of high risk individuals and implementation of preventive strategy will help to reduce prevalence of EAC. BE is metaplastic alteration of esophageal epithelium diagnosed on endoscopic examination. Exact mechanism of transformation of normal epithelium to specialized columnar epithelium of BE is not clear. BE characteristically involves lower third of esophagus,

sometimes middle and upper part may get involved. Many patients of BE remain asymptomatic.

In the present study we used advanced technique of NBI for the diagnosis of BE. NBI is a promising screening tool and patients with history of long duration of GERD should be screened for development of BE. NBI also referred as digital chromoendoscopy. It is an alternative method of visual enhancement of tissues having similar appearance on chromoendoscopy [15]. Among non-dysplastic BE patients, low rate of malignant transformation has been reported recently. BE patients with high-grade dysplasia should receive endoscopic ablative treatment. Recent guidelines recommend use of endoscopic ablation therapy for low-dysplastic BE cases also [16]. There is scarcity of literature about prevalence, risk factors, diagnosis and prospective follow up studies investigating transition of BE to malignancy. In future such studies are urgently warranted.

Conclusion

There is 2.1% frequency of BE among GI symptomatic patients. GERD, smoking, tobacco and alcohol consumption are identified risk factors in our studied population. As BE is a predisposing factor for Esophageal Adenocarcinoma (EAC), early identification of high risk individuals and implementation of preventive strategy will help to reduce prevalence of EAC.

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