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Original Article

Premalignant and Malignant Esophageal Lesions in Bangladeshi Patients-A Study in a Tertiary Care Hospital

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Abstract

Background: *In Bangladesh esophageal carcinoma is the leading malignant condition. Mortality rate of esophageal cancer is very high. Like other malignancies, early detection offers the best prognosis for esophageal carcinoma. Regular endoscopic and histologic surveillance have become standard procedure for follow up of patients with premalignant lesions.* ***Objectives:****The aim of this study was to evaluatethe frequency and pattern of esophageal lesions with respect to age and sex groups andtodetermine the trends of histology, site distribution and risk factors of it.* ***Methods:*** *This study was a cross sectional study, carried out at the department of Pathology in Dhaka Medical College and Hospital from March 2018 to February 2020. Total 54 cases of esophageal biopsy were included in this study.All obtained samples were selected for routine histopathological study* ***Results:*** *Most of the patients were male and mean age was 55.04 (±15.48) years. Squamous cell carcinoma was the most common malignancy seen in (26 cases) 48.15 % of patients and Barrett's esophagus was common (13 cases, 24.07%) premalignant lesion. Maximum malignant and premalignant lesions (40 cases, 74.07%) were located in lower thoracic region of esophagus including gastroesophageal junction. Dysphagia was the main presenting complain in 96.3% of patients and 55.6% of patients were smoker.* ***Conclusion:*** *Barrett's esophagus was the common premalignant lesion and squamous cell carcinoma was the commonest esophageal carcinoma followed by adenocarcinoma.*

Keywords: *Barrett's esophagus, Esophageal squamous cell carcinoma, Esophageal adenocarcinoma.*

Introduction: On a world wide basis, cancer of esophagus is in the seventh position among all the malignancies and there is an estimation of 572,000 new cases and 509,000 deaths in 2018[1]. It is the leading malignant condition in Bangladesh. In 2018 the incidence of esophageal carcinoma in Bangladesh was 20,906 (13.9%) and death rate was 19,357 (17.9%).[2] Esophageal carcinoma is one of the most common cancer with a high mortality and the male: female ratio is about 3:1[3].

In esophagus, common premalignant lesions include Barrett's esophagus (BE) and squamous intraepithelial neoplasia. Squamous cell carcinoma, adenocarcinoma, adenosquamous carcinoma, small cell carcinoma, undifferentiated carcinoma are common among the malignant lesions. Among these, squamous cell carcinoma (SCC) is the most common type of esophageal cancer in the Indian subcontinent and the usual location is in the middle third of esophagus[4].

Like other malignancies, early detection offers the best prognosis for esophageal carcinoma.[5] In majority of cases, due to advanced stage of the disease remedial treatment cannot be undertaken at the time of diagnosis.[6] The risk factors for squamous cell carcinoma (SCC) and adenocarcinoma (AC) include tobacco use, alcohol consumption, dietary insufficiencies, hot food and beverages, gastroesophageal reflux disease (GERD),

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Helicobacter pylori infection, human papilloma virus (HPV), radiation, age, obesity and genetic factors.[7]

Esophageal squamous intraepithelial neoplasia (ESIN) has been widely recognized as a precursor lesion for esophageal squamous cell carcinoma (ESCC). According to 2000 World Health Organization, ESIN can be classified into two types based on the severity of cytologic and architectural atypia.[5] They are low grade (LGESIN) and high grade (HGESIN). Many studies have illustrated that there is a multistage tumor development from basal cell hyperplasia to ESIN and finally into an invasive ESCC.[8] As because Barrett's esophagus and esophageal adenocarcinoma sharing similar genetic mutations, so that Barrett's esophagus supposed to be a precursor lesion of esophageal adenocarcinoma.[9] Among patients with high grade dysplasia, the crude incidence of esophageal adenocarcinoma ranges from 5.6% to 6.6% per year. 10 Regular endoscopic and histologic surveillance have become standard procedure for follow up of patients with premalignant lesions.[11]

The aim of this study was to evaluate the frequency and histologic pattern of premalignant and malignant esophageal lesions with respect to age and sex groups and to determine the site distribution and risk factors of esophageal carcinoma.

Methods

This cross sectional study was carried out at the department of Pathology in Dhaka Medical College and Hospital from March 2018 to February 2020 which enrolled 54 histopathologically diagnosed premalignant and malignant esophageal lesions. Cases of both sexes and all age groups were included in this study. The specimens were excluded if there any fragmented and tiny tissue or any history of oncological treatment or carcinoma on other sites.

Hematoxylin & eosin stained sections of each cases were reviewed to confirm the histological diagnosis and WHO histological grading. Then according to WHO defined criteria all malignant cases were categorized into well, moderate and poorly differentiated groups and all premalignant lesions categorized according to dysplasia.

Results

A total of 54 cases (40 males and 14 females) were included in this study (Fig-1). Age of the study patient range from 21 to 95 years. Most of the cases (25 cases, 46.3%) were found in 41-60 years of age. Mean age of the patients was found 55.04 (±15.48) years (Fig-2). Five histomorphological types were diagnosed in this study. It was observed that squamous cell carcinoma was found in 26 patients (48.15%) followed by adenocarcinoma in 11 patients (20.37%). Adenosquamous carcinoma was seen only in 1 patient (1.85%). Premalignant lesions include Barrett's esophagus (13 patients, 24.07%) followed by squamous intraepithelial neoplasia in 3 patients (5.56%) (Table-I). Dysphagia was the commonest clinical presentation (52 cases, 96.3%), followed by heart burn (33 cases, 61.1%). Central chest pain was found in 20 cases (37.0%) and vomiting in 10 cases (18.5%) (Fig-3). Most common predisposing factor that was observed among these patients was smoking. It was found in 30 cases (55.6%) followed by betel nut chewer in 25 cases (46.3%) and PPI/H2 blocker intake found in 20 cases (37.0%). Least relevant history was found alcohol intake in 2 cases (3.7%) (Table-II). Among the 54 cases, most (27 cases, 71.1%) of the malignant and premalignant (13 cases, 81.25%) lesions were located in lower thoracic region of esophagus including gastroesophageal junction, 3.7% (2 cases) were in upper thoracic region and 22.22% (12 cases) were in mid thoracic region (Table-III). Out of 16 cases of premalignant lesions 13 cases were Barrett's esophagus and 3 cases were squamous intraepithelial neoplasia. Among the cases of Barrett's esophagus Negative for dysplasia was found in 8 patients (50%). Indefinite for dysplasia found in 4 patients (25%) and Low grade dysplasia found in 1 patient (6.25%). Low grade squamous intraepithelial neoplasia was found in 3 cases (18.75%). High grade dysplasia was not found in this study (Table-IV). Among the 38 malignant cases it was observed that 19 cases (50%) were diagnosed as moderately differentiated esophageal carcinoma followed by 12 cases of well differentiated esophageal carcinoma (Table-V).

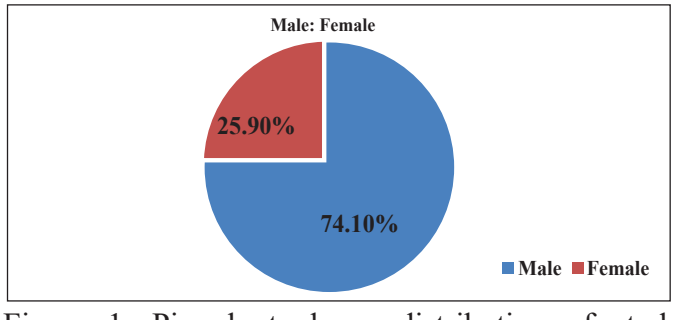

Figure 1. Pie chart shows distribution of study patients according to sex

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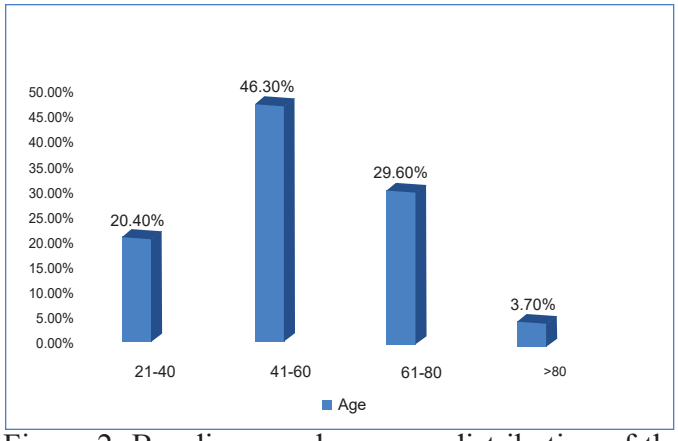

Figure 2. Bar diagram shows age distribution of the study patients

Table I: Distribution of study patients according to histomorphology (n=54)

Histomorphological type	Number	Percentage
Squamous cell carcinoma	26	48.15
Adenocarcinoma	11	20.37
Adenosquamous carcinoma	1	1.85
Barrett's esophagus	13	24.07
Squamous intraepithelial neoplasia	3	5.56

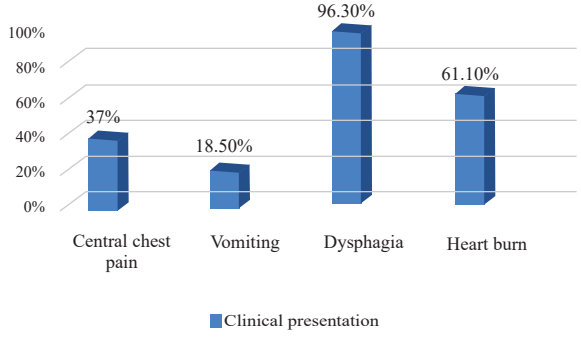

Figure 3. Bar diagram shows the clinical presentation of the study patients.

Table II: Distribution of predisposing factors in study patients (n=54)

Predisposing factors	Number	Percentage
Smoking	30	55.6
Alcohol	2	3.7
Betel quid	25	46.3
PPI/H2 blocker	20	37

Table III. Distribution of patients according to site of tumor (n=54)

Site of Tumor	Malignant cases (%)	Premalignant cases(%)	Total cases (%)
Upper Thoracic region	1(2.6)	1(6.25)	2(3.7)
Mid Thoracic region	10(26.3)	2(12.5)	12(22.22)
Lower Thoracic region including gastroesophageal junction	27(71.1)	13(81.25)	40(74.07)
Total	38	16	54

Table IV: Histomorphologic grading for dysplasia in premalignant cases (n=16)

Premalignant lesions	Number	Percentage
Premalignant lesion for Adenocarcinoma (Barrett's esophagus)		
Negative for dysplasia	8	50
Indefinite for dysplasia	4	25
Low grade dysplasia	1	6.25
High grade dysplasia	--	--
Premalignant lesion for Squamous cell carcinoma (Squamous intraepithelial neoplasia)		
Low grade dysplasia	3	18.75
High grade dysplasia	--	--
Total	16	100

Table V: Distribution of study patients according to histomorphologic grading in malignant cases (n=38)

Histomorphologic grading	Number of cases	Percentage
Well differentiated	12	31.6
Moderately differentiated	19	50
Poorly differentiated	7	18.4
Total	38	100

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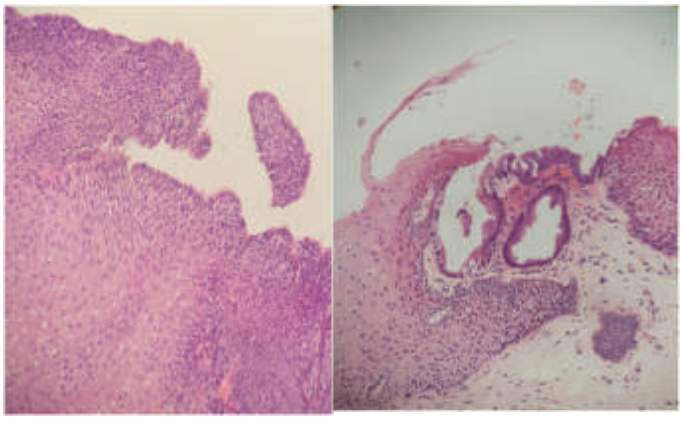

Figure 4. Left Photomicrograph showing squamous dysplasia, low grade (Case No:12, H&E X10). Right Photomicrograph showing Barrett's esophagus with negative for dysplasia (Case No:04, H&E X10)

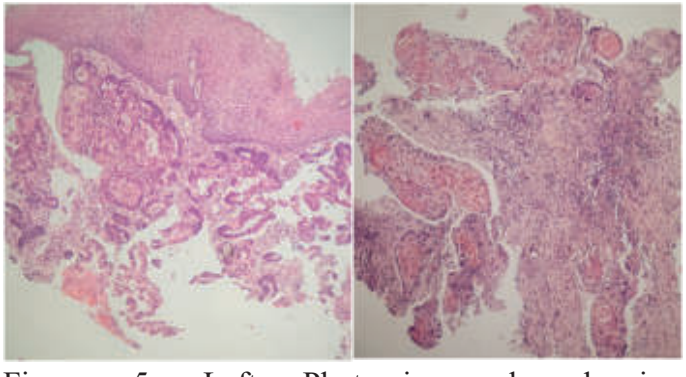

Figure 5. Left Photomicrograph showing adenocarcinoma, well differentiated (Case No: 23, H&E X10). Right Photomicrograph showing squamous cell carcinoma, well differentiated (Case No: 34, H&E X10)

Discussion

Esophageal carcinoma is one of the most deadly form of malignant condition in gastrointestinal tract. Despite of recent advances in chemotherapy and surgery, this condition is extremely aggressive in nature and shows low survival rate, mostly 5-years. More than half of the patients were suffering from inoperable disease at the time of diagnosis.[12]

This cross sectional study was carried out to in a tertiary care hospital to observe the frequency and histologic pattern of premalignant and malignant esophageal lesions with respect to age and sex groups. This study included 54 patients diagnosed as premalignant and malignant esophageal lesions.

In this study, 40 cases were male (74.1%) and 14 cases were female (25.9%) and the male female ratio was 2.85: 1(Fig-1). Study done by Khattab et al. in 2013 observed that male-to-female ratio was 3:1 which is almost similar to our study 13 Samarasam (2017) also observed in their study that, there were 99 male patients and 39 female patients with the ratio of 3:1.[3]

In this present study, it was observed that the age of majority cases (46.3%) was between 41-60 years. The mean age of the study population was 55.04 (±15.48) years, ranging from 21 to 95 years (Fig-2) and almost similar to the study of Elkareem et al. (2015) where age ranged between 14 to 89 years with mean age 55.9 years. 7 Mean age 53.7 years was found by Samarasam (2017) which is close to our study.[3]

In this study, five histomorphological types were diagnosed in premalignant and malignant esophageal lesions. It was observed that out of three types of malignant lesions, squamous cell carcinoma was found in 26 patients (48.15%) followed by adenocarcinoma in 11 patients (20.37%). Premalignant lesions including cases of Barrett's esophagus were found in 13 patients (24.07%) followed by squamous intraepithelial neoplasia in 3 patients (5.56%) (Table-I). Study done by Shil et al. (2010) in Bangladesh, stated that squamous cell carcinoma was the most common malignancy followed by adenocarcinoma. 6A similar finding of common cases of squamous cell carcinoma in esophagus was observed by Samarasam (2017). 3A study done by Xu et al. (2002) were found 59 cases of premalignant lesions and 218 cases of esophageal cancer from the Cancer Hospital, China. 14 Among the premalignant lesions, there were 28 cases of mild dysplastic lesions and 31 cases of severe dysplastic lesions. Of these esophageal cancers, there were 169 cases of squamous cell carcinoma (SCC), 29 cases of adenocarcinoma (AC) and 20 cases of adeno-squamous carcinoma.

In this current study, most common clinical presentation observed among these cases was dysphagia which was found in 52 cases (96.3%) followed by heart burn in 33 cases (61.1%). Other presentations were included as central chest pain (20 cases, 37.0%) and vomiting (10 cases, 18.5%) (Fig-3). In a study of Shil et al. (2010), it was shown that dysphagia was the main presenting complain in 94.11% of patients.[6] Another study by Tiwari and Mishra, (2015) observed that, the most common type

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of clinical presentation was dysphagia (86%) followed by heart burn.[15]

In current study, most common predisposing factor observed among these cases, was smoking which was found in 30 cases (55.6%) followed by betel quid chewer in 25 cases (46.3%) and PPI/H2 blocker intake found in 20 cases (37.0%). Alcohol intake was found only in 2 cases (3.7%) (Table-II). A similar finding was found by Samarasam (2017), where smoking was the major risk factor followed by alcohol and obesity.[3] Shil et al. (2010) was reported that Tobacco and betel nut chewing were strong risk factors for esophageal cancer.[6]

Regarding the location of the lesions, among the 54 cases we found that most (27 cases, 71.1%) of the malignant and premalignant (13 cases, 81.25%) lesions were located in lower thoracic region of esophagus including gastroesophageal junction, 2 cases (3.7%) were in upper thoracic region and 12 cases (22.22%) were in mid thoracic region (Table-III). Study done by Samarasam (2017), Shil et al. (2010) and Cherian et al. (2007) also found the lower thoracic region of esophagus to be the most common site for esophageal malignancy.[3,6,4]

Out of 16 cases of premalignant lesions 13 cases were Barrett's esophagus and 3 cases were squamous intraepithelial neoplasia. Among the cases of Barrett's esophagus Negative for dysplasia was found in 8 patients (50%). The other subtypes were Indefinite for dysplasia, Low grade dysplasiaand High grade dysplasia. Indefinite for dysplasia found in 4 patients (25%) and Low grade dysplasia found in 1 patient (6.25%). Low grade squamous intraepithelial neoplasia was found in 3 cases (18.75%). High grade dysplasia was not found in this study (Table-IV). A study done by Kerkhof et al. (2008) revealed that, negative for dysplasia 47%, low grade dysplasia 32% and high grade dysplasia in 15% cases.[16]

In this present study, among the 38 malignant cases, 12 cases (31.6%) were well differentiated esophageal carcinoma, 19 cases (50.0%) were moderately differentiated and 7 cases (18.4%) were poorly differentiated (Table-V). A study was done by Elkareem et al. (2015) where they found each of well differentiated and moderately differentiated tumors accounting for 47.6% followed by poorly differentiated tumors accounting for 4.8%.[7] Possibly, the differences between the current study and the study report of Elkareem et al. (2015) was due to the sample size variation.

Conclusion

This study was a preliminary investigation and represents an addition to the data on incidence in Bangladesh. Squamous cell carcinoma continues to be the most common type of esophageal cancer in our country and the lower esophagus appeared to have greater predilection for malignant and premalignant lesions.

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