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Histopathological spectrum of carcinoma esophagus: A 5 year retrospective study

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Abstract

Introduction: Due to rapid development and fatal prognosis, esophageal cancer is one of the most serious gastrointestinal cancer worldwide. Esophageal cancer incidence and histological type is extremely variable based upon geographic location, ehinicity and gender.

Aim: To study the characteristics of esophageal cancer with respect to the clinical features, age, sex, histopathologic subtypes, location of tumor, in this region.

Materials and Method: This retrospective study was done for a period of 5 years in the Department of Pathology GMC Jammu. Data regarding clinical features, age, sex, tumor location and histopathological diagnosis was retrieved from the request forms of the Departments of Pathology. Slides and blocks were taken from the archives of the Department of Pathology. All the slides were re-evaluated.

Results: A total of 53 cases of esophageal carcinoma were identified in this study. The youngest patient was 28 years old and oldest patient was 82 years old. Male: female ratio was 1.9:1. Most patients 94% present with progressive dysphagia and weight loss while others 6% had history of chronic reflux disease. Among 53 cases, 21 specimens of esophagectomy and esophagogastrectomy were received while 32 samples were from endoscopic biopsy. Squamous cell carcinoma (SCC) was diagnosed in 47 patients while adenocarcinoma (ADC) was reported in 6 cases. Features like tumor site, tumor size, gross appearance of the tumor, histopathologic type, histopathologic grade, pTNM staging were noted. Most commonly involved site was middle esophagus (n=17) followed by proximal esophagus (n= 9) and lower esophagus (n= 6). The ratio of adenocarcinoma to SCC was 3:1 in the lower esophagus, 1:16 in the mid-esophagus and 0:1 in the upper esophagus. Among SCC cases, well differentiated tumors accounts for 41.5% of cases and moderately differentiated were 30.1%. In ADC group majority of the tumors were well differentiated (3.8%) while moderately differentiated were 7.5%. The highest TNM stage grouping recorded in resected specimens was pT3N1M0 Stage IIIa.

Conclusion: Majority of esophageal carcinomas are of squamous cell carcinoma type, found mostly in middle and upper esophagus and there is increasing trend in incidence of adenocarcinoma of lower end of esophagus due to high prevalence of gastro esophageal reflux disease.

Keywords: Esophageal carcinoma, Squamous cell carcinoma, Adenocarcinoma.

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Introduction

Esophageal cancer is considered a serious malignancy with respect to its prognosis, morbidity mortality. Esophageal carcinoma is the eighth most frequent cancer and the sixth most common cause of cancer related deaths worldwide with developing nations making up more than 80% of total cases and deaths[(1)] despite a lot of advances in diagnosis and treatment. The 5-year survival rate of patients diagnosed with esophageal cancer varies from 15% to 20%.[(2)] Esophageal cancer incidence and histological type is extremely variable based upon geographic location. Incidence rates of squamous cell carcinoma (SCC) of the esophagus have been reported as high as 100 cases per 100000 annually in an area referred to as the "Asian esophageal cancer belt."[(3)] Adenocarcinoma predominantly arise from Barret's oesophagus and long standing gastro esophageal reflux. The risk of esophageal cancer increases with constant exposure to stimulants like hot beverages, alcohol and smoking. It has higher incidence in societies with low economic status, severe malnutrition, low vitamin, fruit and vegetable intake, and also associated high consumption of alcohol and cigarettes. The unalterable factors in this cancer include age, sex and hereditary background.[(4)] The rapid increase of adenocarcinoma (ADC) is believed to be associated with the increase in the prevalence of gastro esophageal reflux due to use loads of modern medicines and rise in prevalence of obesity. Despite the rapid increase of ADC following gastro esophageal reflux in Western countries, no increase has been observed in Asian countries.[(5)]

Materials and Method

This retrospective study was done for a period of 5 years in the Department of Pathology GMC Jammu. Patients with histologically proven esophageal cancer were retrospectively studied. The pathologic diagnosis of esophageal cancer was obtained by the evaluation of the 53 specimens from surgical resection or endoscopic biopsy (endoscopic biopsies n=32, radical esophagectomy specimens n=21). Data regarding

clinical features, age, sex, tumor location and histopathological diagnosis was retrieved from the request forms of the Departments of Pathology. Slides and blocks were taken from the archives of the Department of Pathology. All the slides were re-evaluated. Patients with SCC or adenocarcinoma that secondarily invaded the esophagus from a non esophageal primary tumor and patients in whom the esophagus was involved with metastatic disease were excluded. The site of the tumor was categorized as upper, middle, lower esophagus.

Aim

This study was done to describe the characteristics of esophageal cancer with respect to the clinical features, age, sex, histopathologic subtypes, location of tumor, in this region since its distribution varies with location.

Results

A total of 53 cases of esophageal carcinoma were identified in this study. The youngest patient was 28 years old and oldest patient was 82 years old. Male: female ratio was 1.9:1. Most patients 94% present with progressive dysphagia and weight loss with dysphagia being the most important and the first symptom. While others 6% had history of chronic reflux disease. Among 53 cases, 21 specimens of esophagectomy and esophagogastrectomy were received while 32 samples were from endoscopic biopsy. Squamous cell carcinoma was diagnosed in 47 patients while adenocarcinoma was reported in 6 cases. A rare basaloid squamous cell carcinoma was also seen in a 70 years old female who presented with dysphagia and loss of weight. The tumour was in the lower part of the esophagus. Features like tumor site, tumor size, gross appearance of the tumor, histopathologic type, histopathologic grade, pTNM staging were noted. In 35 cases (32 endoscopic and 3 esophagogastrectomy specimens) abovementioned features were not obtained. Most commonly involved site was middle esophagus (n=17) followed by proximal esophagus (n= 9) and lower esophagus (n= 6). The ratio of adenocarcinoma to SCC was 3:1 in the lower esophagus, 1:16 in the mid-esophagus and 0:1 in the upper esophagus. Among SCC well differentiated tumors accounts for 41.5% of cases and moderately differentiated were 30.1%. In ADC group majority of the tumors were well differentiated (3.8%) while moderately differentiated were 7.5%. All tumors were staged according to the UICC pTNM classification of esophageal carcinoma.[6] Among 3 esophagogastrectomy specimens; lymph nodes could not be retrieved. Thus pTNM staging could be done in 18 cases. The highest TNM stage grouping recorded in resected specimens was pT3N1M0 Stage IIIa (Table 1, 2)

Table 1: The distribution of cases according to their age, sex and nature of lesion

Age (years)	Sex		Squamous	Adenocarcinoma	No. of lesions
	Male	Female			
<30	1	nil	1	nil	1
31-40	4	2	6	nil	6
41-50	5	3	5	3	8
51-60	10	6	15	1	16
61-70	8	3	9	2	11
71-80	5	4	9	nil	9
>80	2	nil	2	nil	2
Total	35(66%)	18(34%)	47(88.6%)	6(11.4%)	53(100%)

Table 2: The distribution of cases according to anatomical site, macroscopic appearance, histopathological type/grade and stage

Variables	Squamous cell carcinoma (n=47)		Adenocarcinoma (n=6)		Grand total (n=53)	Percentage (100%)
	No	%	No	%	No	%
Anatomical site			0	0	11	20.5
Upper esophagus	11	20.5				
Middle esophagus	16	30.1	1	1.9	17	32
Lower esophagus	1	1.9	3	5.6	4	7.5
Site not mentioned	19	35.9	2	3.7	21	40
Gross/Macroscopic features						
Exophytic	6	11.3	0	0	6	11.3
Ulcerative	9	17	0	0	9	17

Mixed	3	5.6	0	0	3	5.6
Not documented	29	54.7	6	11.3	35	66.1
Histologic grade						
Well differentiated	22	41.5	2	3.8	24	45.3
Moderately differentiated	16	30.1	4	7.5	20	37.7
Poorly differentiated	9	17	0		9	17
Pathological staging (pTNM)UICC						
T2N0M0	8	15.1	0	0	8	15.1
T2N1M0	3	5.6	0	0	3	5.6
T3N0M0	4	7.6	0	0	4	7.6
T3N1M0	3	5.6	0	0	3	5.6
Not documented	29	54.7	6	11.3	35	66.1
Tumor Stage						
Stage 1b	8	15.1	0	0	8	15.1
Stage 2a and 2b	7	13.2	0	0	7	13.2
Stage 3 a	3	5.6	0	0	3	5.6
Not documented	29	54.7	6	54.7	35	66.1

Discussion

Despite the fact that in western countries, the incidence of squamous cell carcinoma is showing progressive decline while cases of adenocarcinoma is also increasing steadily.[7] However, squamous cell carcinoma still show wide geographic variation especially in Asia, Africa and Iran.[8] In present study, squamous cell carcinoma was the predominant histological type of esophageal cancer accounting for 88.6% of cases, While 11.4% cases of adenocarcinoma were observed.

Esophageal cancer is extremely rare in people under 40 year, and its rate increases every decade.[9] In present study, age range was 26-82 years. 45.2% cases were seen in 5^{th}-6^{th} decade of life. Qureshi et al and Bazaz-Malik G also found most of the cases in 5^{th}-6^{th} decade of life.[10,11]

There is extensive variation in female to male ratio as far as squamous cell esophageal Carcinoma is concerned.[12,13]

In our study, the male: female ratio of squamous cell carcinoma was 1.7:1, while male: female ratio in cases of adenocarcinoma was 2:1. The higher percentage of tumor in our male population may be attributed to higher prevalence of smoking and alcohol consumption as compared to females.

The greater incidence of esophageal carcinoma in men regardless of histological type has been reported by various investigators.[14,15]

Dysphagia and/or odynophagia are common presenting complaints of the patients of esophageal carcinoma. Symptoms of weight loss, dyspnoea, cough, hoarseness of voice and retrosternal pain reflect presence of widespread un-resectable stage of carcinoma oesophagus.[16] In present study 94% of patients had history of dysphagia and weight loss .6% cases presented with history of chronic acid reflux disease. Chronic acid reflux into the esophagus is considered a risk factor of adenocarcinoma gastro-esophageal junction and lower esophagus. Two large population-based studies have shown that chronic reflux is associated with increased risk of adenocarcinoma lower esophagus and cardia.[17,18]

Middle esophagus was most common site in 30.1% cases of squamous cell carcinoma, upper esophagus in 9% and lower esophagus in 3% of cases in present study. Adenocarcinonma was commonly seen in lower esophagus followed by middle esophagus 5.6% and 1.9% respectively.

Mehrotra et al, reported that the middle third of the esophagus was the most common site of esophageal cancer in India and more than 95% of neoplasms were of the SCC type.[19]

In another study, 50% of oesophageal cancers were located in the middle third, 30% in the lower third and 15% in the upper third of the oesophagus. 90% of these cancers were of the squamous cell type and only 10% were adenocarcinomas.[20]

Among 47 cases of squamous cell carcinoma, 22 cases were found to be well differentiated, 16 cases were graded as moderately differentiated and 9 cases were observed as poorly differentiated. In this category (SCC) a rare basaloid squamous cell carcinoma was also included. This type of squamous cell carcinoma consists of squamous cells and basaloid spindle cells and it should be distinguished from small cell carcinoma of the esophagus which, unlike basaloid squamous carcinoma is positive for chromogranin and CD56.[21]

Out of 6 cases of adenocarcinoma, 4 cases were graded as well differentiated and 2 were reported as moderately differentiated. The recently reported increasing incidence of adenocarcinomas in the lower esophagus is related to malignant transformation of Barrett's esophagus.[22]

Conclusion

Majority of esophageal carcinomas are of squamous cell carcinoma type, found mostly in middle and upper esophagus and there is increasing trend in

incidence of adenocarcinoma of lower end of esophagus due to high prevalence of gastro esophageal reflux disease.

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