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HIGH PREVALENCE OF ESOPHAGEAL CANCER IN NORTH EASTERN REGION OF INDIA – A TERTIARY CARE INSTITUTE EXPERIENCE

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ABSTRACT

Introduction: Esophageal cancer is one of the most common cancer in north eastern region of India. This study was done to evaluate prevalence, demographic features and patient characteristics of esophageal cancer in our clinical settings at NEIGRIHMS, Shillong, Meghalaya.

Methods: A retrospective analysis medical records of 155 patients of the Esophageal Cancer registered in the Department of Oncology, Neigrihms from January 2013 to December 2015 was conducted.

The site of the disease, the histological pattern and staging were recorded in addition to the various demographic parameters of the patient.

Results: Esophageal cancer is the most common cancer among the cancer patients registered in our Department. Male: Female ratio was 4.34:1 and the mean age of them was 50.49 years. The majority were from Christian ethinic group (72.9%). Tobacco consumption (73.5%) in the form of paan and smoking was the common identifiable risk factor. Dysphagia (90%) was the the most frequently presented symptoms at the time of presentation. Squamous cell carcinoma was the most common histopathology (91.6%) and followed by adenocarcinoma 8.4%. Middle third (67.7%) was the most common site of disease.

At the time diagnosis, 29% patients were in stage I and II, 43.5% in stage III and 20.6% in stage IV disease. In 6.7% patients proper staging could not be documented.

Conclusion: Esophageal cancer is an aggressive disease with a generally poor prognosis and most of the malignancies are diagnosed in the advanced stage of the disease. Higher incidence of esophageal cancer in this region needs further demographical and risk factor evaluation. Education of general population about the potential risk factors of using tobacco in the form of smoking, paan, beetle nut, and intake of alcohol can be suggested.

INTRODUCTION

Esophageal cancer (EC) is the 10th most common cancer and the 8th most common cause of cancer death in the world. Worldwide, an estimated 482,000 people per year are diagnosed with esophageal cancer, and about 406,000 people die annually from the disease [1]. It constitutes 7% of all gastrointestinal cancers and is one of the most lethal of all cancers. The esophageal cancer belt is a geographic area of high incidence, which stretches from north-central China westward through Central Asia to northern Iran[2]. The uneven geographical distribution of esophageal cancer reflects the influence of local environmental conditions, lifestyle factors and genetic predisposition in the development of this cancer [3]. Cancer of esophagus is common in India and has been reported increasingly in the southern states like Karnataka, Kerala, Tamilnadu and others like Assam and Kashmir [4-6].

According to GLOBOCAN 2012 estimate, in India, there were 42,000 new cases of EC, the incidence being 4.13% of all new cancer cases, and 39,000 deaths were caused due to EC [1]. Studies have shown that the incidence of esophageal tumor is higher in countries like India especially in North Eastern region. The Assam and Mizoram states of NE-India are among the highest incidence region of esophageal cancer, with an age-adjusted rate of around 17/100000 to 27 per/100000 population[7]. Internationally, the male/female rates vary from less than two percent to more than twenty percent.

Mainly two type of esophageal cancer occur- squamous cell carcinoma (ESCC) & adenocarcinoma. There has been an increase in the incidence of adenocarcinoma of the esophagus in developed countries. However, in India, squamous cell carcinoma still remains the most common esophageal malignancy [8,9].

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Approximately three quarters of all adenocarcinomas are found in the distal esophagus, whereas squamous cell carcinomas are more evenly distributed between the middle and lower third.

Etiology of esophageal cancer is not yet clear, but it is a multi-step progressive process. The use of tobacco products including cigarette, cigar, chewing tobacco is a major risk factor for esophageal cancer. Tobacco and/alcohol account for approximately 90% of all esophageal squamous cell carcinomas. The proportion of tobacco-related cancers relative to all sites is highest in Assam and Meghalaya. These proportions are relatively higher than those reported elsewhere in the country. Pattern of tobacco use is different in North-East region where bidis and cigarettes available locally are different from main land.

Diets of scant amounts of fruits, vegetables, and animal products are associated with increases in SCC [10].

Many other factors such as dietary nitrosamine, micronutrient deficiency, HPV, opium and spicy food have been suggested as possible additional factors [3].

The prevalence of esophageal cancer has increased six times in the recent three decades, which was the most rapid increase between major malignancies [11].

This study was designed to evaluate prevalence, demographic features and patient characteristics of esophageal cancer in our clinical settings at NEIGRIHMS, Shillong. The aim of the present analysis was to collect baseline data so that further work may be done in the etiopathogenesis of this common malignancy in this region.

MATERIALS AND METHODS

A retrospective analysis of medical records of total 155 patients of Esophageal Cancer registered in Department of Oncology, Neigrihms Hospital, shillong from January 2013 to December 2015 was conducted. Only cases confirmed by histopathology and for whom the esophagus was the primary site of tumor, were included in the study. Details of various demographic variables including age, gender, locality, religion and also the addiction patterns of the patients, symptoms and tage at presentation were collected from case file.

Nonsmokers were defined as having smoked fewer than 100 cigarettes in their lifetime or less than one cigarette per day for 6 months or more.

Alcohol consumption was assessed from the usual intake of beer, wine, and liquor from the age at which they started drinking at least one alcoholic beverage per month. Apart from routine investigation, upper gastrointestinal endoscopy and biopsy, Chest radiographs, abdominal ultrasound, and computed tomography (CT) of the chest and abdomino-pelvic region were performed.

The clinical staging was performed using TNM (American Joint Committee on Cancer (AJCC) cancer staging manual) from the investigations.

Being a retrospective study, no ethical approval was required for the study as all the patients were treated with the standard departmental protocol

Statistical analysis was done by calculating percentages and ratios for each variable.

RESULTS

Esophageal cancer was the most common cancer registered at Oncology department, NEIGRIHMS, shillong from Jan 2013 To 31 Dec 2015. Among patients having esophageal cancer, male to female ratio was 4.34:1 and the mean age of them was 50.49 years. 77.4% patients belonged to Meghalaya and 22.5% were referred from outside Meghalaya .The majority were from Christian ethinic group (72.9%). Most of cases reported with a history of tobacco consumption (73.5%) and most common type of tobacco use was paan which is combination of lime, tobacco and betel nut followed by both smoking paan and alcohol consumption (50.5%).

Dysphagia 90% was the the most frequently presented symptoms at the time of presentation followed by pain abdomen, vomiting (25%) and weight loss (10%). 8 patients had trachea-esophageal fistula at the time of presentation.

The primary location of the disease was 6.5, 67.7, and 19.3% in upper, middle, and lower third of the esophagus, respectively. In 6.5% of cases multiple sites are involved. Squamous cell histology was identified in 91.6% of the patients, while 8.4% patients had adenocarcinoma.

At the time diagnosis, 29% patients were in stage I and II,, 43.5% in stage III and 20.6% in stage IV disease. In 6.7% patients proper staging could not be documented. The most common site of metastasis were in lung followed by liver, non-regional lymph nodes and brain. The results have been summarized in Table 1.

Table 1 Patient Characteristics and Summary

Variables	Male	Female
Sex	81.3%	18.7%
Age	0-40 → 23 (14.8%) 41-50 → 49(31.6%) 51-60 →50(32.2%) >60→33 (21.2%) 50.49(Mean)	
Religion	Christian- 72.9%	
Smoking (bidi)	49.7%	
Paan	73.5%	
Alcohol, smoking and paan	50.3%	
Squamous cell carcinoma	91.6%	
Adenocarcinoma	8.4%	
Site of malignancy- 1.Upper	6.5%	
Middle	67.7%	
Lower	19.3%	
Two sites	6.5%	
Dysphagia	90%	
Pain abdomen and vomiting	25%	
Weight loss	15%	
Cough	10%	
Stage at presentation 1. stage I and II 2. Stage III 3. Stage IV 4. No documentation	29% 43.3% 20.6% 6.3%	
Association with TOF	8 patients	
Common site of metastasis	45.1% - Lung 35.5% - Liver 12.9% -Non regional lymph nodes 3.2% - brain	

DISCUSSION

Esophageal Cancer is a disease with fatal prognosis and approximately half of the patients present with unresectable or metastatic disease, thus cure rate of more than 15% are seldom achieved. From the record of our Department, esophageal cancer is most common tumor (17.3% of total registered cases).The high prevalence in this region is indicative of several factors that predispose to esophageal cancer and this points to an alarmingly high prevalence of esophageal cancer in this region. However definitive epidemiological data is lacking.

In the present study, out of 1 55 esophageal cancer patients, 81.3 % were males and 18.7 % were females. Male to female ratio was 4.34:1 and the mean age of them was 50.49 years. Most of the western literature has reported male to female ratio of 4:1[12,13]. The male predominance is due to the fact that males are more exposed to habit of smoking and tobacco chewing, and of their increased awareness and accessibility to health-care service.

Majority of them were in age group of 41-60 years and 31.6% cases were from the age group 41-50 years and 38.7% in 51 -60 years. In our study most of the patients of esophageal cancer were seen in 5th decade (41- 50 yrs) of life followed by 4th & 6th decades. Another Indian study by Chitra *et al*., also reported similar age patterns with 5% cases below the age of 40 years with majority 62% cases of age group 41-60 year[14]. Another study done in Kashmir showed that esophageal cancer is common in 5th decade and in general distribution males cases were more than female [15]. A similar study done on prevalence of head and neck cancer in Assam shows the commonest age group was in 6th decade [5].

Western literature has reported alcohol and tobacco use to the major risk factor for SCC, accounting for 80-90% of the cases[16]. Tobacco use in the form of paan seen in 73.5% % of our patients, is a major risk factor for esophageal cancer. Tobacco use is strongly associated with esophageal cancer. Both smoking, paan and alcohol was seen in 50.3% patients. It has been reported that smoking and drinking have synergistic effects, which may increase the relative risk over 100-fold than that induced by smoking or drinking alone.

In the Indian subcontinent, chewing tobacco as a betel quid also known as paan (a combination of betel leaf, slacked lime, areca nut and tobacco with or without other condiments), smoking *bidi* (a local handrolled cigarette of dried temburni leaf containing coarse tobacco) and drinking locally brewed crude alcoholic drinks are factors related to the occurrence of cancer[17].

Dysphagia was the most common presenting complaint seen in 90 % of the patients which indicated that most of the patient were in advanced stage.

Dysphagia occurs when the lumen is obstructed by about 75% of the circumference, although a small tumor may cause a tight stenosis through intense fibrosis [18-20]. This finding is in conformity with the findings of Gibb J F *et al*. [21]. Pain abdomen and vomiting (25%), weight loss (15%) and cough were the other most common presentation. 8 patients had trachea-esophageal fistula at the time of presentation.

In our study, 67.7% involved middle third of esophagus, which is the common site of this disease in India followed lower third (19.3%).6.5% of cases multiple sites are involved. Similar findings were reported in previous studies [18,22,23].

In another study by Giri *et al*., the percentage of patients with upper, middle, and lower third cancer was 9.66, 40.57, and 49.76%, respectively [24].

But the distal third of the esophagus as the most common site for esophageal cancer other studies [8, 25, 26].

Worldwide, squamous cell carcinoma is the predominant histological type [27], and our study also reveals the predominance of squamous cell type (91.6%). This is similar to reports from other parts of Africa and India in which over 90% of esophageal cancer are squamous cell carcinomas [5, 8, 18, 22, 28, 29]. The rising incidence of adenocarcinoma observed in western countries is not found in our study.

ESCC in the Indian population is associated with poor nutritional status, low socioeconomic conditions, bidi smoking and consumption of smokeless tobacco products, besides alcohol drinking and cigarette smoking [30].

In the present study, the majority of patients presented late with an advanced stage of cancer (63.9%), which is in keeping with other studies in developing countries [18, 22, 28, 31]. The majority of our patients presented with late-stage disease, making them inoperable.

The main reason for this poor prognosis is that most cases are asymptomatic and go undetected until they have spread beyond the esophagus and are unresectable. In this setting, successful strategies for primary prevention and early detection of curable lesions are critically needed to control this disease.

In view of the retrospective nature of the study, the potential limitation about our study is that information about some patients was incomplete and also TNM staging was based on Computer Tomography (CT) findings.

CONCLUSION

Esophageal cancer is an aggressive disease with a generally poor prognosis and most of the malignancies are diagnosed in the advanced stage of the disease. Higher incidence of esophageal cancer in this region needs further demographical and risk factor evaluation. Dysphagia is an alarming symptom, and any patient complaining of dysphagia particularly from the north eastern region of India should be thoroughly investigated with the suspicion of Esophageal cancer. Education of general population about the potential risk factors of using tobacco in the form of smoking, paan, beetle nut, and intake of alcohol can be suggested.

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