

## PREVALENCE OF AGE, GENDER AND TYPE OF GASTRO OESOPHAGEAL JUNCTION MALIGNANCY IN A TERTIARY CARE HOSPITAL

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### ABSTRACT

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#### BACKGROUND

Cancer of the oesophagus is the ninth most common malignancy, causes 2% of all cancer-related deaths worldwide. This study was aimed to determine the type of malignancy more common in gastro oesophageal junction as well as to know the age and gender distribution of malignancy.

#### METHODS

Longitudinal study was done by including all the diagnosed cases of carcinoma of gastro oesophageal junction who had undergone oesophagectomy. The resected specimen of the subset of patients with adenocarcinoma was examined for the presence of intestinal metaplasia using haematoxylin and eosin stain.

#### RESULTS

A total of 36 patients were studied. Among the 36 cases, 21 cases (58.33%) were squamous cell carcinoma with 13 patients (61.9%) between 50 years and 70 years of age and rest 15 cases (41.66%) were adenocarcinoma with 8 patients (53.3%) between 50 to 60 years of age. All the adenocarcinomas were presented in late stage (T3 or T4), 60% with lymph node metastasis and 20% of patients had intestinal metaplasia. Among the patients with squamous cell carcinoma, 62% presented with T3 disease and 33% presented with T2 disease and only 19% of patients had lymph node metastasis.

#### CONCLUSION

Among the malignancy at the gastro oesophageal junction, squamous cell carcinoma with female dominance was more common than adenocarcinoma with male dominance. Most of the cases were with well differentiated tumours presenting at a late stage of the disease either T3 or T4 with low incidence of lymph node metastasis. Adenocarcinoma showed a low incidence of specialized intestinal metaplasia.

#### KEYWORDS

Gastro oesophageal junction, Adenocarcinoma, Squamous cell carcinoma, Metaplasia, Oesophagectomy.

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**INTRODUCTION:** Cancer of the oesophagus is believed to represent approximately 1.5% of newly diagnosed invasive malignancies in United States, accounting 5.4% of all carcinomas of the digestive tract.<sup>[1]</sup> Among the oesophageal cancer, adenocarcinoma accounts for nearly 70% of all oesophageal carcinomas diagnosed in the United States and Western countries.<sup>[1]</sup> It is the ninth most common malignancy worldwide and is highly virulent to causes 2% of all cancer-related deaths.<sup>[2]</sup> Nearly 97% of adenocarcinomas develop in the middle and distal oesophagus and many extend into the stomach, if they are located near the gastro oesophageal junction whereas the second type, squamous cell carcinomas involve 20% in the upper third of the

oesophagus, 50% in the middle third and the remaining 30% extend from the distal part of the oesophagus to the gastro oesophageal junction. Proximal tumours also rapidly perforate the oesophageal wall to invade adjacent structures such as trachea, bronchi, and adjacent spaces such as the mediastinum.<sup>[3]</sup> Oesophageal adenocarcinoma had an increase of over 35% during the past 2 decades.<sup>[4]</sup>

The distribution of oesophageal cancer across gender, age and race is affected by the cell type. The prevalence was found to be increased in all populations consistently with age. The highest mortality rates were seen among men of ages between 60 and 70 years. Surgical resection is the mainstay of therapy, although most cases are diagnosed at a late stage. Report on the prevalence and gender distribution of gastro oesophageal junction malignancy among the population where this study conducted was nil. This study was aimed to determine the type of malignancy more common in gastro oesophageal junction as well as to know the age and gender distribution of malignancy.

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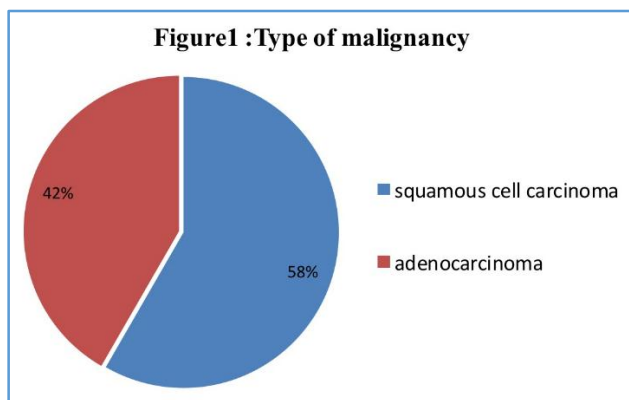
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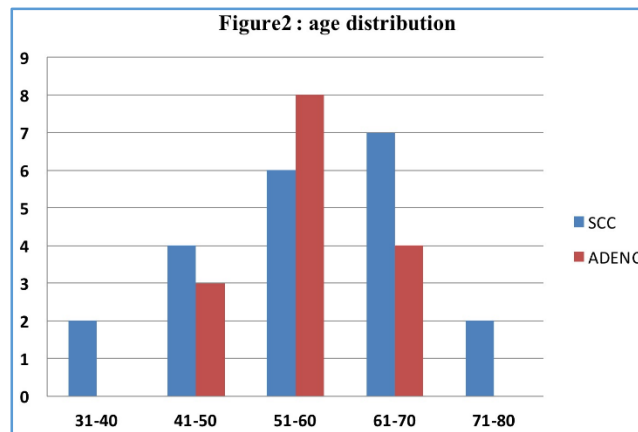
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**METHODS:** A longitudinal study was done by including all the diagnosed cases of carcinoma of gastro oesophageal junction who had undergone oesophagectomy in the Department of General Surgery, Govt. Medical College, Kozhikode, Kerala during the period of 3 years from 2011 – 2014. Patients initially deemed unresectable, who had good response to neoadjuvant chemotherapy and subsequently underwent surgery were also included. Patients with carcinoma of stomach extending to oesophagus, carcinoma unresectable on laparotomy were excluded from the study. Written consent was obtained from the patient or their relatives and the study design was approved by the Institutional Ethics Committee for Research. The resected specimen of the subset of patients with adenocarcinoma was examined for the presence of intestinal metaplasia using haematoxylin and eosin stain.

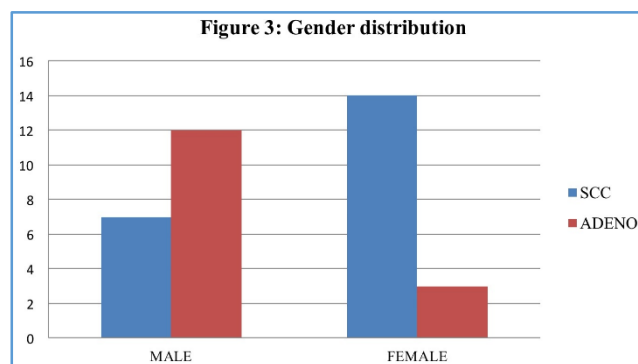
**RESULTS:** A total of 36 patients were studied. Among the 36 cases, 21 cases (58.33%) were squamous cell carcinomas and rest 15 cases (41.66%) were adenocarcinomas (Figure 1). Among the patients, 14 patients (38.9%) were in the age group 51-60 and 11 patients (30.6%) were in the age group 61-70. There were 9 patients below 50 years of age, of which 2 patients were below 40 years. Among the 21 squamous cell carcinoma patients, 13 patients (61.9%) were between 50 years and 70 years of age. Among the 15 adenocarcinoma patients, 8 patients (53.3%) were between 50 to 60 years of age (Figure 2). The incidence of squamous cell carcinoma increases with age. The maximum incidence was seen after 60 years of age, whereas that of adenocarcinoma was below 60 years of age. Squamous cell carcinoma was dominant in females (66.7%) and the adenocarcinoma was found to be more common in males (80%) (Figure 3).



**Figure 1: Distribution of the type of gastrooesophageal junction malignancy**



**Figure 2: Distribution of age among the gastro oesophageal junction malignancy**



**Figure 3: Distribution of gender among the gastro oesophageal junction malignancy**

Among the 36 patients, 66.7% of patients presented with T3 stage disease (Table 1) and 13 patients (36.1%) had lymph node metastasis (Table 2). All the 15 adenocarcinoma patients (100%) presented in late stage (T3 or T4), 60% with lymph node metastasis and 20% of patients had intestinal metaplasia. Among the patients with squamous cell carcinoma, 62% presented with T3 disease and 33% presented with T2 disease and only 19% of patients had lymph node metastasis.

**DISCUSSION:** Results of this study revealed that squamous cell carcinoma was more common in gastro oesophageal junction than adenocarcinoma, accounting for 58% of cases studied. This finding was against the usual literature which states that adenocarcinomas are the most common malignancy affecting gastro oesophageal junction.<sup>[5]</sup> It also differs with studies reported by Brown et al.<sup>[6]</sup> and Gajperia et al.<sup>[7]</sup>

Oesophageal malignancy shows peak incidence in 6<sup>th</sup> decade of life with squamous cell carcinoma in the age group 60 – 70 years and adenocarcinoma in 50 -60 years. The average age of patients presenting with gastro oesophageal junction malignancy in the present study was 57.9, the youngest being 36 and oldest being 74. Maximum cases were in the age group 50-60 years (38.8%). This age distribution was similar to studies reported by Ferlay et al.<sup>[8]</sup> and Oshawa et al.<sup>[9]</sup> Further, Jaffer et al.<sup>[10]</sup> and Robson et al.<sup>[11]</sup> showed that the incidence of squamous cell carcinoma

was increasing with age and maximum cases were in the age group 60-70 years.

Squamous carcinoma accounts for the majority of oesophageal carcinomas worldwide. The most distal parts of the oesophagus and cardia are most commonly affected by adenocarcinoma.<sup>[5]</sup> The shift in the epidemiology of oesophageal cancer from predominantly squamous carcinoma was seen in association with smoking and alcohol, to adenocarcinoma in the setting of Barrett's oesophagus, is one of the most dramatic changes that had occurred in the history of human neoplasia.<sup>[12]</sup>

According to the present study, the gastro oesophageal junction malignancy was almost equally distributed between males (19 cases) and females (17 cases) (male to female ratio of 1.1:1). However, the previous studies by Tetley et al.<sup>[13]</sup> which showed male to female ratio of 4:1. Furthermore, in the present study, squamous cell carcinoma was found commonly in females than males with a male to female ratio of 0.5:1. This is in contrast with the studies reported by Rutegard et al.<sup>[14]</sup> and Vizcaino et al.<sup>[15]</sup> showed a male to female ratio of 1.1:1 and 3:1, respectively. The reason for this female dominance is not clear from this study.

The present study showed that around 60% of malignancy affecting gastro oesophageal junction, both squamous cell carcinoma and adenocarcinoma, were well differentiated. This was in consistent study by Enzinger et al.<sup>[16]</sup> and Devessa et al.<sup>[17]</sup> Usually the gastro oesophageal junction malignancy presented in late stage of disease. In our study, around 67% of patients (24 out of 36) presented in T3 stage. This was almost comparable with the results of study reported by Ellis et al.<sup>[18]</sup> showed that around 53.4% presented with T3 disease.

Study reported by Brown et al.<sup>[19]</sup> showed only 32.3% of adenocarcinoma presented with T3 or T4 disease while in this study, 100% of the adenocarcinoma patients presented in late stage that is either T3 or T4. However, in case of squamous cell carcinoma a proportion (33.3%) presented in T2 stage, even though majority (66%) presented in T3 stage which was comparable with study of Heatly et al.,<sup>[18]</sup> which showed around 30% of squamous cell carcinoma presented with T2 disease.

Standard literature quotes that early lymph node metastasis was common in oesophageal malignancy.<sup>[2]</sup> But in the present study among the 36 cases, only 13 patients (36%) had lymph node metastasis. This was low when compared to study reported by Akiyama et al.<sup>[20]</sup> which showed 70.8% of lymph node metastasis in the gastro oesophageal junction malignancy. The low incidence of 36% may be due to the fact that most of the cases of gastro oesophageal junction malignancies were dealt with transhiatal oesophagectomy in which a radical lymph node dissection was not done. The present findings were observed with the available lymph nodes in the resected specimen.

In the present study, only 19% of squamous cell carcinoma patients (4/21) had lymph node metastasis whereas 60% of adenocarcinoma patients (9/15) showed

lymph node metastasis. This was similar to the study of Akiyama et al.<sup>[20]</sup> which showed 30% and 70% lymph node metastasis in squamous cell carcinoma and adenocarcinoma patients. Specialised intestinal metaplasia was thought to be a precursor lesion for development of adenocarcinoma in oesophagus. About 70% of adenocarcinoma developed from Barrettes' oesophagus through metaplasia to dysplasia to carcinoma sequence.

Among the 15 patients with adenocarcinoma, only 3 patients (20%) showed the presence of intestinal metaplasia. However, the results of Albertoruol et al. and Chandrasoma et al.<sup>[21]</sup> studies showed that 85 (36/42) and 65% (48/74) of prevalence of intestinal metaplasia in adenocarcinoma gastro oesophageal junction. The probable reason for the low prevalence of intestinal metaplasia in the present study may be due to the fact that adenocarcinoma patients presented at late stage of disease in which the intestinal metaplasia would have been replaced by carcinoma.

**CONCLUSION:** The result of the study concluded that among the malignancy at the gastro oesophageal junction, squamous cell carcinoma was more common than adenocarcinoma. Female dominance was found in the squamous cell carcinoma and adenocarcinoma was more common in males. Most of the cases were with well differentiated tumours presenting at a late stage of the disease either T3 or T4 with low incidence of lymph node metastasis. Adenocarcinoma showed a low incidence of specialized intestinal metaplasia.

T staging	SCC	ADENO	Total	%
T1	1	0	1	.03%
T2	7	0	7	19.4%
T3	13	11	24	66.7%
T4	0	4	4	11.1%

**Table 1: Distribution of T staging in gastro oesophageal junction malignancy**

N staging	SCC	ADENO	Total	%
N0	17	6	23	63.9%
N1	4	9	13	36.1%

**Table 2: Distribution of N staging in gastro oesophageal junction malignancy**

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**Ethical Approval:** The study was approved by the Institutional Ethics Committee.

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