EPIDEMIOLOGICAL STUDY OF CARCINOMA OESOPHAGUS

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ABSTRACT

Oesophageal malignancies are not an uncommon disease entity in this part of India. It is observed in both the sexes. Patients present with progressive dysphagia for solids. The duration of symptoms varies from 6 months to 2 years. Among the various aetiological factors, smoking, alcohol intake, spicy hot food intake, industrial pollution and achalasia cardia are a few worth mentioning.

AIM OF THE STUDY

To evaluate the differences in the predisposing factors causing squamous cell carcinoma and adenocarcinoma of oesophagus in this part of India.

MATERIALS AND METHODS

The study is conducted in the Department of Surgery at Government Medical College Hospital, Kozhikode; Kerala. One hundred patients attending the Department with history of Dysphagia were included after thorough history taking, clinical and endoscopic examination and found to have malignant growths in the oesophagus which was confirmed by biopsy and histopathological examination. Various aetiological factors were elicited and analysed in both the histological varieties of malignancy of oesophagus.

OBSERVATIONS AND RESULTS

Significant number of patients with history of paan chewing presented with histological picture of squamous cell carcinoma as compared to patients who had adenocarcinoma. Gastroesophageal reflux disease was more commonly associated with adenocarcinoma. Out of 37 patients with adenocarcinoma, 31 patients had history of gastroesophageal reflux disease (83.8%). 6 patients had no history of gastroesophageal reflux disease (16.2%) within histology. Consumption of hot drinks, tea and coffee more than 10 per day has been analysed. 52 were consuming, 48 were not consuming, P value 0.179 non-significant.

CONCLUSIONS

Squamous cell carcinoma is more prevalent as compared to adenocarcinoma in present study. The main factor that has emerged is lifestyle, dietary habit, smoking and alcohol, and environmental factor. Consumption of alcohol and smoking is known risk factors in carcinoma oesophagus, but present study shows no significance as more number of females are present in this study. Females rarely consume alcohol in this part of the country, but among alcoholics/smokers, majority have squamous cell carcinoma which is significant. Habit of paan chewing is more common among females.

KEYWORDS

Oesophagus, Malignancy, Squamous Cell Carcinoma, Adenocarcinoma, Endoscopy, Histology, GERD and Dysphagia.

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INTRODUCTION: Oesophageal cancer is diagnosed in about 400,000 patients per year, which makes it the ninth most common malignancy worldwide and sixth on the list of cancer mortality.[1] The incidence of oesophageal cancer has increased in recent years, outstripping all other solid tumours, largely because of a dramatic increase in the incidence of adenocarcinoma of the distal oesophagus.[2] Oesophageal cancer is known for its marked variation by geographic region, ethnicity, and gender.

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Some of the highest mortality rates in both men and women occur in the so-called Asian oesophageal cancer belt, which includes northern most parts of India.[3,4]
With the greater use of endoscopic screening for upper gastrointestinal symptoms, the number of patients presenting to our institution with this disease is on the rise.

At the time of diagnosis, 2 of 3 patients will have tumours that are considered inoperable because of comorbidities or tumour extension. Due to delayed presentation and multifactorial nature in carcinoma oesophagus, it poses a great challenge in cancer therapy and cure.[5] In this part of the world, high incidence might be due to interaction of various factors such as lifestyle, food habit, smoking, consumption of hot drinks and alcohol, consumption of high salty food, deep fried meat and fish in oil for long time may be implicated in causation in carcinoma oesophagus.[6]

Oesophageal carcinoma has a peculiar geographical distribution and shows marked variation in the incidence within a particular geographical region. Presently, there seems little prospect of early detection of this cancer. An understanding in aetiological factors may give opportunities in primary prevention in this cancer. Incidence rates vary internationally by nearly 16 fold with highest rate found in Southern and Eastern Africa and Southern Asia.[7]

In the highest risk area stretching from North Iran through Central Asian Republic to North Central China, 90% of cancers are squamous cell carcinoma, major risk factors in these area are not well understood.[8] Temporal trends in the incidence vary in two major histologic types of oesophageal carcinoma. Incidence rates in adenocarcinoma have been increasing in several western countries. In contrast, squamous cell carcinoma is still more common in developing countries.[9] In this study, various factors that may be associated with carcinoma oesophagus and different factors that are associated with squamous cell carcinoma and adenocarcinoma has been studied.

AIM OF THE STUDY: To study difference in predisposing factors between squamous cell carcinoma and adenocarcinoma oesophagus; compare the differences of clinical presentations among adenocarcinoma and squamous cell carcinoma oesophagus patients.

MATERIALS AND METHODS: A prospective study was conducted on patients presenting with Malignancies of Oesophagus for 2 years between December 2010 and November 2012 attending the Department of Surgery, Govt. Medical College; Kozhikode. The sample size was 100.

Inclusion Criteria: Patients of all age groups presenting with history of dysphagia and diagnosed as carcinoma of oesophagus. All patients with carcinoma oesophagus admitted, and follow-up cases in Medical College, Kozhikode.

Exclusion Criteria: Methodology: Study involved analysing various aetiological factors causing carcinoma oesophagus in patients of this part India. All patients were interviewed about their life style, dietary habit, smoking and alcohol, chewing habit, gastroesophageal reflux disease, etc. Study included all newly detected and follow-up cases.

OBSERVATIONS AND RESULTS: Among the One hundred patients, 65 were males and 35 were females.

Squamous cell carcinoma was observed in 63 patients among the 100, and 37 were diagnosed as Adeno carcinoma of oesophagus. Among the Squamous cell carcinoma patients, 39 (61.90%) were males and 24 (38.09%) were females. Among the adenocarcinoma patients, males were 26 (70.27%) and females were 11 (31.42%), (Table 1).

Present study shows male preponderance, 65% male and 35% female with age between 40-70 years. The ratio was nearly 1.81:1 which is comparable to data for India, based on International Agency for Research on Cancer (1.9:1). P value 0.397 which is insignificant.

	Male - 65	**%**	**Female - 35**	**%**	**P value**
Squamous cell Carcinoma-63	39/63	61.90	24/37	38.09	0.397
Within the sex	39/65	60.0%	24/35	68.57	0.345
Adenocarcinoma -37	26/37	70.27	11	29.72	0.335
Within the sex	26/65	40.0	11/35	31.42	0.420

Table 1: Showing the Incidence of Sex and Types of Malignancies in Oesophagus (n=100)

The risk estimate calculated using standard statistical methods using 95% confidence interval with Odds ratio for histological type as 1.00/2.00, it showed significant values (Table 2).

Risk Estimate			
	Value	**95% Confidence Interval**	
		Lower	**Upper**
Odds Ratio for Histology (1.00 / 2.00)	.688	.288	1.640
For cohort Sex = 1.00	.881	.662	1.172
For cohort Sex = 2.00	1.281	.712	2.305
No. of Valid Cases	100		

Table 2: Showing the 95% Confidence Values in Relation to the Sex and Histological Types of Malignancy of Oesophagus (n=100)

History of alcohol consumption was present 47 patients out of 100 and among them 33 (70.20%) patients presented with Squamous cell carcinoma. Among the 63 patients with Squamous cell carcinoma 30 (47.61%) gave history of not consuming alcohol. Among the 47 patients with history of alcohol consumption 33 (70.20%) developed Squamous cell carcinoma. Similar values for Adeno carcinoma were found to be 14 (37.80%) for alcohol users and 23 (62.2%) non-users. Within the histology group the incidence was 47.0% and 53.0% respectively (Table 3).

			Alcohol		
			Present	**Absent**	**Total**
Histology	Squamous cell CA	Count	33	30	63
		% within Histology	52.4%	47.6%	100.0%
		% within Alcohol	70.2%	56.6%	63.0%
		% of Total	**33.0%**	**30.0%**	**63.0%**
	Adeno CA	Count	14	23	37
		% within Histology	37.8%	62.2%	100.0%
		% within Alcohol	29.8%	43.4%	37.0%
		% of Total	**14.0%**	**23.0%**	**37.0%**

Total	Count	47	53	100
	% within Histology	47.0%	53.0%	100.0%
	% within Alcohol	100.0%	100.0%	100.0%
	% of Total	**47.0%**	**53.0%**	**100.0%**

Table 3: Showing the Incidence of Malignancies of Oesophagus Related to Alcohol Intake (n=100)

P value = 0.159

The risk estimate calculated using standard statistical methods using 95% confidence interval with Odds ratio for histological type as 1.00/2.00, it showed significant values (Table 4).

Risk Estimate			
	Value	**95% Confidence Interval**	
		Lower	**Upper**
Odds Ratio for Histology (1.00/2.00)	1.807	.789	4.137
For cohort Alcohol = 1.00	1.384	.861	2.227
For cohort Alcohol = 2.00	.766	.534	1.099
N of Valid Cases	100		

Table 4: Showing the 95% Confidence Values in Relation to Alcohol Consumption and Histological Types of Malignancy of Oesophagus (n=100)

History of consumption of Toddy as a factor in the aetiology of malignancy of oesophagus was elicited and it was found that it was significant in its causation as shown in the Table 5.

			Toddy		**Total**
			Present	**Absent**	
Histology	Squamous cell CA	Count	11	52	63
		% within Histology	17.5%	82.5%	100.0%
		% within toddy	91.7%	59.1%	63.0%
		% of Total	**11.0%**	**52.0%**	**63.0%**
	Adeno CA	Count	1	36	37
		% within Histology	2.7%	97.3%	100.0%
		% within toddy	8.3%	40.9%	37.0%
		% of Total	**1.0%**	**36.0%**	**37.0%**
Total		Count	12	88	100
		% within Histology	12.0%	88.0%	100.0%
		% within toddy	100.0%	100.0%	100.0%
		% of Total	**12.0%**	**88.0%**	**100.0%**

Table 5: Showing the Incidence of Malignancies Of Oesophagus Related to Toddy Intake (n=100)

P value = 0.028

The risk estimate at 95% confidence interval was calculated as shown in the Table 6.

Risk Estimate			
	Value	**95% Confidence Interval**	
		Lower	**Upper**
Odds Ratio for Histology (1.00/2.00)	7.615	.941	61.616
For cohort toddy = 1.00	6.460	.869	48.045
For cohort toddy = 2.00	.848	.748	.962
N of Valid Cases	100		

Table 6: Showing the 95% Confidence Values in Relation to Toddy Consumption and Histological Types of Malignancy of Oesophagus (n=100)

In this study, 52 (52%) patients were in the habit of consuming hot drinks and 48 (48%) of them were not. The P value was 0.179 and not significant. But within hot drinks consumers, 69.2% were diagnosed as squamous cell carcinoma and 30.8% were diagnosed as adenocarcinoma (Table 7, 8).

			Hot Drinks		**Total**
			Present	**Absent**	
Histology	Squamous cell CA	**Count**	**36**	**27**	**63**
		% within Histology	57.1%	42.9%	100.0%
		% within Hot drinks	69.2%	56.3%	63.0%
		% of Total	**36.0%**	**27.0%**	**63.0%**
	Adeno CA	Count	16	21	37
		% within Histology	43.2%	56.8%	100.0%
		% within Hot drinks	30.8%	43.8%	37.0%
		% of Total	**16.0%**	**21.0%**	**37.0%**
Total		Count	52	48	100
		% within Histology	52.0%	48.0%	100.0%
		% within Hot drinks	100.0%	100.0%	100.0%
		% of Total	**52.0%**	**48.0%**	**100.0%**

Table 7

P value = 0.179

Risk Estimate			
	Value	95% Confidence Interval	
		Lower	Upper
Odds Ratio for Histology (1.00/2.00)	1.750	.771	3.972
For cohort Hot Drinks = 1.00	1.321	.863	2.025
For cohort Hot Drinks = 2.00	.755	.506	1.127
N of Valid Cases	100		

Table 8: Showing the Confidence Intervals of the Aetiological Factor of Consuming Hot Drinks

The present study showed 56 (56%) patients gave history of smoking and 44 (44%) did not give any history of smoking. Among the smokers, 67.95% were diagnosed as squamous cell carcinoma. The remaining 32.1% were diagnosed as having adenocarcinoma (Table 9, 10).

Table 9: Smoking

			Smoking		Total
			Present	Absent	
Histology	Squamous cell CA	Count	38	25	63
		% within Histology	60.3%	39.7%	100.0%
		% within Smoking	67.9%	56.8%	63.0%
		% of Total	**38.0%**	**25.0%**	**63.0%**
	Adeno CA	Count	18	19	37
		% within Histology	48.6%	51.4%	100.0%
		% within Smoking	32.1%	43.2%	37.0%
		% of Total	**18.0%**	**19.0%**	**37.0%**
Total		Count	56	44	100
		% within Histology	56.0%	44.0%	100.0%
		% within Smoking	100.0%	100.0%	100.0%
		% of Total	**56.0%**	**44.0%**	**100.0%**

Table 9: Showing the Incidence of History of Smoking with Histologic Type of Carcinoma Of Oesophagus (n=100)

P value = 0.256

Risk Estimate			
	Value	95% Confidence Interval	
		Lower	Upper
Odds Ratio for Histology (1.00 / 2.00)	1.604	.708	3.638
For cohort Smoking = 1.00	1.240	.842	1.826
For cohort Smoking = 2.00	.773	.499	1.196
N of Valid Cases	100		

Table 10: Showing the Confidence Interval Levels of History of Smoking

17 patients (17%) were paan chewers and 83% were non paan chewers, P value 0.873 which is not significant. But within paan chewers, 64.7% were squamous cell carcinoma and 35.3% were adenocarcinoma which was a significant difference (Table 11, 12).

Table 10: Chewing

Crosstab					
			Chewing Habits		Total
			Present	Absent	
Histology	Squamous cell CA	Count	11	52	63
		% within Histology	17.5%	82.5%	100.0%
		% within Chewing Habits	64.7%	62.7%	63.0%
		% of Total	**11.0%**	**52.0%**	**63.0%**
	Adeno CA	Count	6	31	37
		% within Histology	16.2%	83.8%	100.0%
		% within Chewing Habits	35.3%	37.3%	37.0%
		% of Total	**6.0%**	**31.0%**	**37.0%**
Total		Count	17	83	100
		% within Histology	17.0%	83.0%	100.0%
		% within Chewing Habits	100.0%	100.0%	100.0%
		% of Total	**17.0%**	**83.0%**	**100.0%**

Table 11: Showing the Incidence of History of paan Chewing as an Aetiological Agent (n=100)

P value = 0.873

Risk Estimate			
	Value	95% Confidence Interval	
		Lower	Upper
Odds Ratio for Histology (1.00 /2.00)	1.093	.368	3.249
For cohort Chewing Habits = 1.00	1.077	.434	2.670
For cohort Chewing Habits = 2.00	.985	.822	1.181
N of Valid Cases	100		

Table 12: Showing the 95% Confidence Intervals of Chewing paan as an Aetiological Agent

Among 100 patients, 52% patients gave history of spicy, fried food consumption. 48% had no history of spicy and fried food consumption. P value was 0.466 which is not significant (Table 13, 14). 1% has history of chronic drug intake and 99% gave no history of chronic drug intake. P value was 0.44 and not significant.

Crosstab					
			Food habits		Total
			Present	Absent	
Histology	Squamous cell CA	Count	31	32	63
		% within Histology	49.2%	50.8%	100.0%
		% within Food habits	59.6%	66.7%	63.0%
		% of Total	**31.0%**	**32.0%**	**63.0%**
	Adeno CA	Count	21	16	37
		% within Histology	56.8%	43.2%	100.0%
		% within Food habits	40.4%	33.3%	37.0%
		% of Total	**21.0%**	**16.0%**	**37.0%**
Total		Count	52	48	100
		% within Histology	52.0%	48.0%	100.0%
		% within Food habits	100.0%	100.0%	100.0%
		% of Total	**52.0%**	**48.0%**	**100.0%**

Table 13: Showing the Incidence of Intake of Hot foods as an Aetiological Factor (n=100)

P value = 0.466

Risk Estimate			
	Value	95% Confidence Interval	
		Lower	Upper
Odds Ratio for Histology (1.00 /2.00)	.738	.326	1.670
For cohort Food habits = 1.00	.867	.595	1.264
For cohort Food habits = 2.00	1.175	.755	1.827
N of Valid Cases	100		

Table 14: Showing the 95% Confidence Intervals of Hot Food as a Factor of Oesophageal Carcinoma

4% of patients gave history of chronic disease like Achalasia Cardia, Celiac disease, Tylosis. The remaining 96% patients gave no history of chronic disease. The P value was 0.583 and not significance (Table 15, 16). 1% of the patients gave history of caustic substance injury and the rest of 99% had no history of injury. P value was 0.190 which was not significant.

			Chronic Disease		Total
			Present	Absent	
Histology	Squamous cell CA	Count	2	61	63
		% within Histology	3.2%	96.8%	100.0%
		% within chronic disease	50.0%	63.5%	63.0%
		% of Total	**2.0%**	**61.0%**	**63.0%**
	Adeno CA	Count	2	35	37
		% within Histology	5.4%	94.6%	100.0%
		% within Chronic Disease	50.0%	36.5%	37.0%
		% of Total	**2.0%**	**35.0%**	**37.0%**
Total		Count	4	96	100
		% within Histology	4.0%	96.0%	100.0%
		% within chronic disease	100.0%	100.0%	100.0%
		% of Total	**4.0%**	**96.0%**	**100.0 %**

Table 15: Showing the Incidence of Chronic GIT Diseases as an Aetiological Factors in Malignancies of Oesophagus (n=100)

P = 0.583

Risk Estimate			
	Value	95% Confidence Interval	
		Lower	Upper
Odds Ratio for Histology (1.00 /2.00)	.574	.077	4.255
For cohort chronic disease = 1.00	.587	.086	3.996
For cohort chronic disease = 2.00	1.024	.936	1.119
N of Valid Cases	100		

Table 16: Showing the 95% Confidence Intervals of Chronic Diseases as Aetiology

The present study showed significant association between GERD and adenocarcinoma. 47 patients gave history of GERD and taking treatment for the same. 31 patients among them were diagnosed as adenocarcinoma and 16 were diagnosed as squamous cell carcinoma. Out of the 37 patients with adenocarcinoma, 31 patients gave definite history of GERD (Table 17, 18).

			GERD		Total
			Present	Absent	
Histology	Squamous cell CA	Count	16	47	63
		% within Histology	25.4%	74.6%	100.0%
		% within GERD	34.0%	88.7%	63.0%
		% of Total	**16.0%**	**47.0%**	**63.0%**
	Adeno CA	Count	31	6	37
		% within Histology	83.8%	16.2%	100.0%
		% within GERD	66.0%	11.3%	37.0%
		% of Total	**31.0%**	**6.0%**	**37.0%**
Total		Count	47	53	100
		% within Histology	47.0%	53.0%	100.0%
		% within GERD	100.0%	100.0%	100.0%
		% of Total	**47.0%**	**53.0%**	**100.0%**

Table 17: Showing the Definitive History of GERD in Oesophageal Malignancies (n=100)

P = 0.000

Risk Estimate			
	Value	95% Confidence Interval	
		Lower	Upper
Odds Ratio for Histology (1.00 / 2.00)	.066	.023	.187
For cohort GERD = 1.00	.303	.194	.474
For cohort GERD = 2.00	4.601	2.181	9.705
N of Valid Cases	100		

Table 18: Showing the 95% Confidence Intervals of GERD as an Aetiological Agent

14 among the 100 patients in the present study (14%) were exposed to pollution like working in wood industry, furniture work. 86% were not exposed. The P value was and not significant 0.193. But Following analysis within pollution group 78.6% were diagnosed as squamous cell carcinoma histology as compared to 21.4% with adenocarcinoma (Table 19).

			Pollution		Total
			Present	Absent	
Histology	Squamous cell CA	Count	11	52	63
		% within Histology	17.5%	82.5%	100.0%
		% within pollution	78.6%	60.5%	63.0%
		% of Total	**11.0%**	**52.0%**	**63.0%**
	Adeno CA	Count	3	34	37
		% within Histology	8.1%	91.9%	100.0%
		% within pollution	21.4%	39.5%	37.0%
		% of Total	**3.0%**	**34.0%**	**37.0%**
Total		Count	14	86	100
		% within Histology	14.0%	86.0%	100.0%
		% within pollution	100.0%	100.0%	100.0%
		% of Total	**14.0%**	**86.0%**	**100.0%**

Table 19: Showing the Incidence of Pollution as an Aetiological Agent in Malignancies of Oesophagus (n=100)

P =.193

Risk Estimate			
	Value	95% Confidence Interval	
		Lower	Upper
Odds Ratio for Histology (1.00 / 2.00)	2.397	.623	9.228
For cohort pollution = 1.00	2.153	.642	7.224
For cohort pollution = 2.00	.898	.774	1.042
N of Valid Cases	100		

Table 20: Showing the 95% Confidence Interval Values of Exposure to Industrial Pollution in Oesophageal Malignancies

10 (10%) patients among the 100 gave history of other malignancies like carcinoma stomach and carcinoma breast. The remaining 90 (90%) patients did not give any significant history of other malignancies. The p value was and not significant (Table 21, 22).

			Family History		Total
			Present	Absent	
Histology	Squamous cell CA	Count	5	58	63
		% within Histology	7.9%	92.1%	100.0%
		% within family history	50.0%	64.4%	63.0%
		% of Total	**5.0%**	**58.0%**	**63.0%**
	Adeno CA	Count	5	32	37
		% within Histology	13.5%	86.5%	100.0%
		% within family history	50.0%	35.6%	37.0%
		% of Total	**5.0%**	**32.0%**	**37.0%**
Total		Count	10	90	100
		% within Histology	10.0%	90.0%	100.0%
		% within family history	100.0%	100.0%	100.0%
		% of Total	**10.0%**	**90.0%**	**100.0%**

Table 21: Showing the Incidence of other Malignancies (n=100)

P = 0.369

Risk Estimate			
	Value	95% Confidence Interval	
		Lower	Upper
Odds Ratio for Histology (1.00 /2.00)	.552	.148	2.050
For cohort family history = 1.00	.587	.182	1.895
For cohort family history = 2.00	1.064	.919	1.233
N of Valid Cases	100		

Table 22: Showing the 95% Confidence Intervals of Family History of Malignancies of Oesophagus

Out of 100 patients 8 showed endoscopic signs of oesophageal varices. Among them four had Squamous cell carcinoma and the remaining four patient's adenocarcinoma (Table 23).

			Oesophageal Varices		Total
			Present	Absent	
Histology	Squamous cell CA	Count	4	59	63
		% within Histology	6.3%	93.7%	100.0%
		% within oesophageal varices	50.0%	64.1%	63.0%
		% of Total	**4.0%**	**59.0%**	**63.0%**
	Adeno CA	Count	4	33	37
		% within Histology	10.8%	89.2%	100.0%
		% within oesophageal varices	50.0%	35.9%	37.0%
		% of Total	**4.0%**	**33.0%**	**37.0%**
Total		Count	8	92	100
		% within Histology	8.0%	92.0%	100.0%
		% within oesophageal varices	100.0%	100.0%	100.0%
		% of Total	**8.0%**	**92.0%**	**100.0%**

Table 23: Showing the Incidence of Oesophageal Varices (n=100)

P = 0.427

Among the 100 patients, 8(8%) showed endoscopic features of oesophageal varices, 92% had no oesophageal varices. P value was 0.427 and not significant (Table 24).

Risk Estimate			
	Value	95% Confidence Interval	
		Lower	Upper
Odds Ratio for Histology (1.00 / 2.00)	.559	.131	2.384
For cohort oesophageal varices = 1.00	.587	.156	2.210
For cohort oesophageal varices = 2.00	1.050	.923	1.195
No of Valid Cases	100		

Table 24: Showing the Incidence of Oesophageal Varices with 95% Confidence Intervals (n=100)

The entire study group of patients in OPD presented with progressive dysphagia. The duration of the symptom varied from 6 months to 2 years. The symptom was present irrespective of the patient diagnosed as squamous cell carcinoma or adenocarcinoma (Table 25).

			Progressive Dysphagia	Total
			Present	
Histology	Squamous cell CA	Count	63	63
		% within Histology	100.0%	100.0%
		% within Progressive Dysphagia	63.0%	63.0%
		% of Total	**63.0%**	**63.0%**
	Adeno CA	Count	37	37
		% within Histology	100.0%	100.0%
		% within Progressive Dysphagia	37.0%	37.0%
		% of Total	**37.0%**	**37.0%**
Total		Count	100	100
		% within Histology	100.0%	100.0%
		% within Progressive Dysphagia	100.0%	100.0%
		% of Total	**100.0%**	**100.0%**

Table 25: Showing the Incidence of Progressive Dysphagia (n=100)

RESULTS: The present study showed 47% of the patients were alcoholic and 53% were non-alcoholic. Alcohol is a known risk factor in the causation of carcinoma oesophagus. Many of the patients were females and females in this region of India are rarely alcoholic. P value is 0.159 which is not significant. But as the study analyses within the alcoholic group, 70.2% were diagnosed as having squamous cell carcinoma when compared to adenocarcinoma which was found in 29.8%. This observation has a statistical significant difference. Similarly, the study showed that 12% of the patients were consuming toddy and 88% were not consuming it. When analysed the data within toddy consuming group of patients, 91.7% were diagnosed as squamous cell carcinoma and 8.3% as adenocarcinoma. The P value was 0.02 which was statistically significant with an odds ratio of 7.615.

DISCUSSION: Carcinoma oesophagus is 8th most common cancer and 5th common cause of death. While occurrence of squamous cell carcinoma is still stable in western world, but the incidence of adenocarcinoma is on the rise. Squamous cell carcinoma is still high in the developing world. Till now no single factor has been clearly implicated in its high occurrence in the developing world. Study showed that modification in alcohol and smoking habit in western world has decreased the incidence of squamous cell carcinoma but occurrence of adenocarcinoma in the background of Barrett's oesophagus and gastro oesophageal reflux disease has increased several times.

Squamous cell carcinoma is still high in developing country and several factors have emerged as a causative agent like smoking, alcohol, dietary habit, preparing high salty food, deep fried meat, chicken and fish. Another factor that is, consuming hot drinks in excess like tea, coffee, and local way of preparing tea like 'Kattan' tea and 'Kattan' coffee along with salty food is common in this part of the country. Similar type of study has been conducted in Kashmir valley, where people consume 10-15 cups of tea per day. There they prepare tea in salt, and salt is local irritant to the mucosa.

Biochemical study has shown that in the presence of salt, caffeine is present in tea and coffee which undergo methylation and then in acidic media in stomach converts to nitrosamine compound.[10,11] And it is carcinogenic and mutagenic which has been seen in experimental animals. Present study has been compared with the data from recent epidemiological studies in Sweden. Karolinska Institute, Sweden has interviewed 189 patients with adenocarcinoma and 167 patients with squamous cell carcinoma. The occurrence of adenocarcinoma in patients with reflux disease with an odds ratio of 7.7 (95% confidence interval 5.3-11.4) for adenocarcinoma oesophagus was significant.[12,13]

Gastroesophageal reflux disease was not associated with development of squamous cell carcinoma. Smoking and alcohol were associated with squamous cell carcinoma. This study is comparable with the study conducted in this region also. Data has been compared to epidemiological study conducted in Kashmir were high salt diet, deep fried fish, chicken, spicy food, and consumption of hot drinks like tea and coffee, and smoking are associated with high incidence of squamous cell carcinoma.[14,15] The present study has been conducted in Medical College Kozhikode; Kerala. Patients studied were both newly diagnosed and follow up cases.

They were interviewed specifically about smoking, alcohol, chewing habit, habit of consuming hot drinks in excess (more than 10 cups per day), dietary habit, working in industrial area like wood industry, furniture industry, history of gastroesophageal disease, etc. Smoking, alcohol, chewing habit, spicy and fried food, pollution, hot drinks, are more commonly associated with squamous cell carcinoma and gastro oesophageal reflux disease is more commonly associated with adenocarcinoma. This is comparable with other study conducted in other parts of the country and study conducted in Sweden and Mayo Clinic, USA.[16] Their study has shown that gastro-oesophageal reflux disease in the background of Barrett's oesophagus is commonly associated with adenocarcinoma oesophagus.

In the present study, gastro-oesophageal reflux disease is more commonly associated with adenocarcinoma. In many patients, there is no history of any of those habits. So

a genetic factor may be implicated in occurrence of carcinoma oesophagus.[17]

Study showed male preponderance. 65% were males as compared to 35% females (1.85:1) and squamous cell carcinoma was 63% compared to 37% adenocarcinoma. Majority of patient presented with features of progressive dysphagia and weight loss in both adenocarcinoma and squamous cell carcinoma in surgical OPD. And followup cases in radiotherapy OPD.

CONCLUSIONS: Squamous cell carcinoma is more prevalent as compared to adenocarcinoma in present study. The main factor that has emerged is lifestyle, dietary habit, smoking and alcohol, and environmental factor. Consumption of alcohol and smoking is a known risk factor in carcinoma oesophagus, but present study shows no significance as more number of females was present in this study. Females rarely consume alcohol in this part of the country but among alcoholics/smokers, majority has squamous cell carcinoma which was significant. Habit of paan chewing is more common among females. Out of 17 paan chewers, 11 showed squamous cell carcinoma histology as compared to 6 patients who had adenocarcinoma. Gastroesophageal reflux disease is more commonly associated with adenocarcinoma. Out 37 patients with adenocarcinoma 31 patients had history of gastro oesophageal reflux disease (83.8%). 6 patients had no history of gastro oesophageal reflux disease (16.2%) within histology. Consumption of hot drinks tea and coffee more than 10 per day has been analysed; 52 were consuming, 48 were not consuming, P value 0.179 non-significant. But when analysed within consuming group shows 69.8% were squamous cell as compare to 30.2% adenocarcinoma which shows more towards squamous cell histology. Many patients had no history of any known associated risk factors that shows genetic predisposition like spontaneous mutation can also be implicated. Lack of awareness about this carcinoma oesophagus at mass level is associated with delayed presentation. Delayed presentation that is dysphagia when 50-70% of oesophagus was already stenosed is associated with advanced malignancy and associated with high mortality and morbidity. Lacking of screening program to detect it in early stage might be responsible for its delayed presentation when the disease is already advanced stage. There should be proper monitoring of the incidence and time trends through cancer registration. This should be combined with endoscopic and histological identification of proportion of adenocarcinoma and squamous cell carcinoma. There should be a high level of expertise in cancer oesophagus management like Chinese have developed, for better resection and anastomotic and post-operative care, to prolong the life.

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