

## **A Study of Age, Gender Wise Distribution, Histopathological Features and Treatment of Oesophageal Cancer in Teaching Hospital Jaffna and Oncology Unit Base Hospital Thellipalai**

**R Vaaheesan and S Raviraj\***

*Consultant, Surgeon, Teaching Hospital, Jaffna, Sri Lanka*

**\*Corresponding Author:** S Raviraj, Consultant, Surgeon, Teaching Hospital, Jaffna, Sri Lanka.

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### **Abstract**

The Srilankan Cancer Registry reported a high incidence of esophageal cancer especially in Central and Northern Province (C.R 8, 7). The suitable informations of esophageal carcinoma can help define medical programs for treatment and screening the high risk groups. A comprehensive search was under taken to survey from January 2013 to June 2016 in the Northern Province. About 216 patients were included this study. The age, sex, histological type of cancer, anatomical location of tumour, staging of tumour and type of treatment were analysed in this study will help for future development of management strategy and prevention.

**Keywords:** *Incidence; Adeno Carcinoma; Squamous Carcinoma*

### **Introduction**

Extremely aggressive nature and poor survival rate carcinoma of oesophagus contribute to 500,000 deaths per year worldwide [1]. It is the 6<sup>th</sup> common cause of cancer related deaths [1]. Eighty percentage of oesophageal cancers occurs in less developed countries [1].

In Srilanka, carcinoma of oesophagus is the 5<sup>th</sup> common cancer in both sex and it is 3<sup>rd</sup> common cancer in males whereas 5<sup>th</sup> common tumour in females [2]. Tamil ethnic group has high occurrence of oesophageal tumours when compared to other ethnic groups [3]. In Tamil males it is the 2<sup>nd</sup> leading cancer [2]. Among Srilankan Tamil females it is the 3<sup>rd</sup> common cancer [2]. Though national cancer statics shows comparatively low incidence in the districts of Northern Province, local studies has shown very high incidence of oesophageal carcinoma [4]. According to national cancer statistics central province districts had higher occurrence of oesophageal carcinoma and Matale district had the highest occurrence (C.R 8.7, national occurrence - C.R 5.2) [2]. Jaffna had highest of the tumour among the northern province districts (C.R 4.3) according to national data but a study done in northern province in 2013 had shown a very high occurrence (C.R 11.8), which was the highest incidence observed in Srilanka at any time [4].

### **Materials and Methods**

This is a cross sectional retrospective study conducted both at Teaching hospital Jaffna and cancer unit at Base hospital Thellipalai from January 2013 to June 2016. 268 patients were included in this study.

Patients with histological or radiological diagnosis of oesophageal malignancies were included in this study. The same criteria used in the National cancer statics to identify the malignancies used in this study also. When a tumour extended to involve either pharynx or cardia of stomach those excluded from the study. Oesophageal cancers, which were component of multiple cancers also excluded.

The data were collected by 03 pre-intern doctors, who were trained by principal investigators to extract the data from the clinical records using a data extraction form. The data were mainly collected from the patient records available in the cancer unit at Base hospital Thellipalai as all the cancer patients get medical care in Northern Province hospitals are referred to the unit unless the patients die during the surgical treatment. In teaching hospital Jaffna data were obtained from the bed health tickets of Intensive care unit, where all post-operative patients who had undergone oesophagectomy were managed.

The data obtained includes age, sex, histopathological features, and treatment modalities offered. The histopathological features include histologic type of the tumour, tumour staging and anatomical site of the tumour. The treatment modalities were surgical treatment, and chemo-radio therapy. The principal modality of treatment was categorized as curative surgery, curative chemo-radio therapy, or palliative treatment. In addition, the details of whether the patient had got adjuvant or neo-adjuvant therapy also obtained.

Although majority of the records had complete data some data were missing in small number of records because of defaulted follow up of patients. In such in-stances available data were used for the analysis to give representative picture of the particular malignancy in our population as much as possible.

The data were entered and analysed using SPSS version 21 and chi-square test used to assess the significance of association.

This research was approved by ethical review comity of University of Jaffna.

**Results**

Among 268 patients analyzed, 252 (56.7%) were male, and 43% were female. All the patients analyzed were more than 30 years, mean age of the population is 64.42 and peak incidence was in the age group of 60 - 64 years.

In 2013, number of carcinoma of oesophagus cases detected were 39. In 2014, the figure was 85 while the year 2015 recorded the highest number of new cases (106). In the first half of 2016, the number of detected cases was 38.

Sex	Number	Percentage
Male	152	56.7
Female	116	43.3
Total	268	100.0

*Table 1: Frequency distribution of sex.*

Age group	Count	Percentage
30 - 34	2	0.7
35 - 39	3	1.1
40 - 44	9	3.4
45 - 49	17	6.3
50 - 54	14	5.2
55 - 59	33	12.3
60 - 64	58	21.6
65 - 69	39	14.6
70 - 74	42	15.7
75 - 79	33	12.3
80 - 84	8	3.0
85 - 90	9	3.4
91 - 94	1	0.4
Total	268	

*Table 2: Frequency distribution of age.*

On the type of tumors, details of 263 patients could be obtained. Among them only 29 (11%) had adenocarcinoma and number of squamous cell carcinoma was 224 (85.2%), four (1.5%) were found to have other type of tumors. 6 patient’s results were inconclusive.

Type of tumour	Number	Percentage
Adenocarcinoma	29	11.0
Squamous cell carcinoma	224	85.2
Other type	4	1.5
Inconclusive	6	2.3
Total	263	100.0

**Table 3:** Frequency distribution of histological type of cancer.

For the place of tumor, details of 265 patients were obtained. Among them, mid oesophageal region had high incidences. Next common place for tumors to occur was lower oesophagus. Distribution of tumors based on the places is illustrated in the table.

Place of Tumour	Number	Percentage
Upper	40	15.1
Middle	110	41.5
Lower	101	38.1
Mid and Lower	11	4.2
Upper and Mid	3	1.1
Total	265	100.0

**Table 4:** Anatomical location of tumour.

More than 70% of people diagnosed at advanced stage of the disease. Twenty-five percentage of people had early stage of disease at the time of diagnosis.

Stage	Number	Percentage
0	1	0.4
I	8	3.1
IIA	58	22.1
IIB	3	1.1
IIIA	35	13.4
IIIB	78	29.8
IV	79	30.2
Total	262	100.0

**Table 5:** Staging of the tumour.

Sex wise distribution of type of tumor are illustrated in the table. Both sexes have similar trend on tumor incidences. There is no statically significant different between both sex ( $p < 0.05$ ).

	Adenocarcinoma	Squamous cell carcinoma	Other types	Inconclusive	Total
Male	17 (11.4%)	128 (85.9%)	2 (1.3%)	2 (1.3%)	149 (100.0%)
Female	12 (10.5%)	96 (84.2%)	2 (1.8%)	4 (3.5%)	114 (100.0%)

**Table 6:** Sex wise distribution of type of tumor.

$P: > 0.05$ .

Age wise distribution of tumor types also illustrated in the table.

	Adenocarcinoma	Squamous cell carcinoma	Other types	Inconclusive	Total
30 - 34	0 (0.0%)	2 (100.0%)	0 (0.0%)	0 (0.0%)	2 (100.0%)
35 - 39	2 (66.7%)	1 (33.3%)	0 (0.0%)	0 (0.0%)	3 (100.0%)
40 - 44	0 (0.0%)	9 (100.0%)	0 (0.0%)	0 (0.0%)	9 (100.0%)
45 - 49	0 (0.0%)	17 (100.0%)	0 (0.0%)	0 (0.0%)	17 (100.0%)
50 - 54	0 (0.0%)	14 (100.0%)	0 (0.0%)	0 (0.0%)	14 (100.0%)
55 - 59	3 (9.1%)	30 (90.9%)	0 (0.0%)	0 (0.0%)	33 (100.0%)
60 - 64	8 (13.8%)	47 (81.0%)	1 (1.7%)	2 (3.4%)	58 (100.0%)
65 - 69	7 (17.9%)	32 (82.1%)	0 (0.0%)	0 (0.0%)	39 (100.0%)
70 - 74	6 (15.0%)	32 (80.0%)	0 (0.0%)	2 (5.0%)	40 (100.0%)
75 - 79	3 (10.0%)	22 (73.3%)	3 (10.0%)	2 (6.7%)	30 (100.0%)
80 - 84	0 (0.0%)	8 (100.0%)	0 (0.0%)	0 (0.0%)	8 (100.0%)
85 - 90	0 (0.0%)	9 (100.0%)	0 (0.0%)	0 (0.0%)	9 (100.0%)
91 - 94	0 (0.0%)	1 (100.0%)	0 (0.0%)	0 (0.0%)	1 (100.0%)
	29 (11.0%)	224 (85.2%)	4 (1.5%)	6 (2.3%)	263 (100.0%)

**Table 7:** Age wise distribution of tumor types.

*P* > 0.05

About 55.8% of the patients underwent palliative radiotherapy. It is correlate with the fact that most patients were in the category of later stage.

Management	Number	Percentage
Surgery	36	13.8
Curative Chemo Radio Therapy	55	21.2
Palliative Radiotherapy	145	55.8
Palliative Chemotherapy	12	4.6
Terminal care	12	4.6
Total	260	100.0

**Table 8:** Type of treatment.

	Adenocarcinoma	Squamous cell carcinoma	Other types	Inconclusive	Total
Upper	0	40	0	0	40
Middle	2	101	1	5	109
Lower	24	74	2	1	101
Mid and Lower	2	7	1	0	10
Upper and Mid	0	2	0	0	2

**Table 9:** Location of the tumour.

*P* < 0.05.

Type of treatment	No of patients got treatment	No of patients did not get treatment	Total	Percentage
Neo-adjuvant therapy	04	32	36	13.3%
Adjuvant therapy	16	20	36	44.4%

**Table 10:** Treatment status.

Among the patients undergone surgery 13.3% of them had got neo-adjuvant therapy and 44.4% had got adjuvant therapy.

**Discussion**

Carcinoma of oesophagus gets its clinical significance because of the aggressive nature and poor outcome [5]. The occurrence and biological nature of the disease varies across the countries and even within a country between the zones and among the ethnic groups [5].

In Srilanka central province is considered as having higher occurrence [2]. Tamils have higher incidence compare to other ethnic groups [3].

In males it is the 7<sup>th</sup> common cancer (ASR 9.3) worldwide [1]. It the 8<sup>th</sup> common cancer in females (ASR3.5) [1]. In Srilanka oesophageal cancer accounts for 6.3% of all cancers and over-all it is the 6<sup>th</sup> common cancer (CR 5.2, ASR 5.7) [2]. While it is the 3<sup>rd</sup> common cancer in males (CR 5.6, ASR 6.5) it is the 7<sup>th</sup> common cancer in females (CR 4.8, ASR 5.1) [2]. In northern-province oesophageal tumour is the 3<sup>rd</sup> and 4<sup>th</sup> common malignancy in males and females (9.9% and 10.8%) respectively. In Northern Province it is the 3<sup>rd</sup> common cancer in males (9.9%) and 4<sup>th</sup> common cancer in females.

The gender based distribution of the carcinoma of oesophagus shows equal incidence in high incidence areas such as China, Iran and Africa but it has higher incidence in males than females in low incidence areas (1.3:1) [5,8]. In our study males were affected more than females (56.7% vs 43.3%, 1.3:1).

All the patients in our study are more than 30years. The mean age of our study population is 64.42 and the mean age was 63.8 for squamous cell carcinoma and 64.9 for adenocarcinoma, whereas a study done in southern part of India shows a mean age for squamous cell carcinoma as 54.7 ± 11.4 and for adenocarcinoma as 49.3 ± 13.5 during the period of 2001 - 2004 which is compatible with our finding for squamous cell carcinoma but differs for adenocarcinoma. The peak incidence of our study population was observed in the age group of 60-64 and it is compatible with national data [2].

The commonest oesophageal malignancy in our study was squamous cell carcinoma (85.9%) followed by adenocarcinoma (11%) which is compatible with the Asian histological pattern [3]. Although our national cancer data (SCC 79.7%, AC 11.0%) and a study done in India (SCC 92%, AC 8%) shows predominance of squamous cell carcinoma over adenocarcinoma the percentage slightly varies. In males 85.9% of the patients had squamous cell carcinoma and 11.4% had adenocarcinoma. In females 84.2% had squamous cell carcinoma while 10.5% had adenocarcinoma. The slight difference in the distribution of histological pattern between both sex were not statistically significant (p > 0.05). Females had more incidence of squamous cell carcinoma (85.3% vs 74.9%) than males in national cancer statistics and this was reverse for adenocarcinoma (males 15.2% vs females 6.2%) [2].

Mid part of the oesophagus was mostly affected (41.5%) followed by lower oesophagus (38.1%) and upper oesophagus (15.1%). In contrast to national data which shows lower oesophagus as the most common site of tumour (30.6%) followed by mid oesophageal tumours (22.1%) but it is difficult to compare the data as significant percentage of tumours (43.8%) reported as ‘not other-wise specified’ (NOS) [2]. An Indian study done in southern part shows the lower oesophagus (49.8%) as the commonest site next to mid oesophagus (38.1%) [8].

Considering the lower oesophageal malignancies 73.3% were squamous cell carcinoma but 23.8% were adenocarcinoma, whereas 92.7% of mid oesophageal tumours were squamous type but only 1.8% were adenocarcinoma. All the patients who had upper oesophageal tumours were squamous cell carcinoma (100%). Our results had shown the frequency of occurrence of squamous cell carcinoma increased

from lower to upper oesophagus, whereas the adenocarcinoma had predilection downwards. The difference in the histological pattern of tumour according to the anatomical site was, statistically significant ( $p < 0.005$ ) in our study, and compatible with other studies which were done in Asian population [8,10].

The commonest problem encountered in managing patients with carcinoma of oesophagus is most of the patients present in the advanced stage. In our study 74.4% of the patients presented in the advanced stage whereas 3.5% presented in early stage. Among the patients who had oesophageal tumour at-least 40.1% had resectable tumour. Some patients categorized under stage IIIB also had a resectable tumour (T4a, N1-3, M0). Thirty percentage of patients had an un-resectable tumour, which is significant when compare with other malignancies. Though the national data not available on stage wise distribution of oesophageal tumour an institution based study shows stage III disease (50%) as the commonest type followed by stage IV (29.2%), stage II (16.7%) and stage I (4.1%) [9]. Our study also revealed the same findings and a study done in North west of India also gives the same findings [10].

Among the patients who had undergone surgery 30 patients were potential candidates for neo-adjuvant therapy but only 04 patients (13.3%) had got the treatment. There was no studies available to compare our results. As it is a retrospective study the reasons for the results could not be found. Among the patients who had undergone surgery 44.4% had got adjuvant therapy. The percentage of patients who needed adjuvant therapy among those who had undergone surgery could not be calculated as some records did not contain detailed pathological report, which is needed to find the potential candidates for adjuvant therapy.

## Conclusion

The incidence of carcinoma of oesophagus in Northern region of Srilanka and its distribution among age group is similar to other countries. The tamil ethnicity have a higher incidence of developing carcinoma of oesophagus in Srilanka and this study also have a significant number of patients to support the previous studies. Our current knowledge have to focus more on the etiology of oesophageal squamous cell carcinoma. It still has a long way to go and we have to focus on the etiological factors and prevent the condition in near future specially in Northern and central provinces due to the higher incidence.

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