



## Histologically Confirmed Carcinoma of the Oesophagus; Study from the Niger Delta

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### Authors' contributions

This work was carried out in collaboration between both authors. Author SUO developed the concept, design, intellectual content, clinical studies, managed the literature searches, participated in data acquisition, data analysis, did the statistical analysis, wrote the first draft of the manuscript, manuscript editing, and manuscript review. Author RAU participated in data acquisition, data analysis, manuscript editing and review. Both authors read and approved the final manuscript.

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### ABSTRACT

**Background:** Carcinoma of the oesophagus is amongst the top ten cancers worldwide. It shows marked variation in incidence, types and outcome in the various regions of the world. Adenocarcinoma is the main variant worldwide whereas squamous cell carcinoma appears more common in developing countries.

**Aim of our Study:** We mean to ascertain the hospital incidence and epidemiology of patients presenting with histologically confirmed oesophageal cancer.

**Patients and Methods:** This is a retrospective study spanning from January 2008 to December 2014. It is an evaluation and audit of our management of patients with histologically confirmed cases of oesophageal cancer.

**Results:** A total of 42 cases were enrolled in the study. The male: female ratio was 2.2:1. The mean age was 60.1 years, with the mean male age being 62.3 yrs and female 55.1 yrs. All patients presented with dysphagia and 92.9% had some weight loss, with 31% presenting with cachexia. A greater percentage of patients (83.3%) were from the Niger Delta area, residing at the riverine areas. 54.8% were documented to use local gin. The greater percentage (85.7) of patients

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presented with stage 4 disease. The histological type were squamous cell carcinoma occurring in 85.7% of patients and 14.3% being adenocarcinoma. The tumour was mainly located in the mid portion of the oesophagus 59.5% and 35.7% were located at the lower oesophagus and gastro-oesophageal junction with only 4.8% at the upper thoracic and cervical oesophagus. All had oesophagoscopy and biopsy done either in the endoscopy suite (awake or conscious sedation) or in the theater. Oesophageal intubation was only feasible in 7 patients (16.7%) with only 3(7%) patients having oesophagectomy with gastric pull-up.

**Conclusion:** Oesophageal carcinoma is usually squamous and in the middle third of the thoracic oesophagus. Most patients present late with palliation being the only feasible treatment.

*Keywords: Oesophageal cancer; Benin City.*

## 1. INTRODUCTION

Carcinoma of the oesophagus is amongst the top ten cancers worldwide [1]. Carcinoma of the oesophagus is under reported in West Africa where it is relatively rare making less than 5% of all gastrointestinal tumours. Most reports from this region are hospital based and population studies are lacking. It shows marked variation in incidence, types and outcome in the various regions of the world [1,2,3]. Whereas in some areas the incidence appear to be rising, it has plateaued in others [4]. Worldwide, it occurs three times more in men than in women, however this male preponderance is especially skewed in the Adenocarcinoma form of the cancer [1,2]. Two main histological variants exists, namely the Squamous Cell Carcinoma (SCC) and the Adenocarcinoma (AC) [2]. The SCC arises from the epithelial cells and occurs predominantly in the upper oesophagus and the AC arises from the glandular cells and is frequently located in the lower thoracic oesophagus [1,4].

The risk factors for Oesophageal SCC are tobacco and alcohol abuse and ingestion of hot beverages and malnutrition, but, obesity, reflux oesophagitis and Barret oesophagus remain the main risk factors in AC [2,3,4,5].

The main symptom of oesophageal cancer is difficulty swallowing (dysphagia) which usually occurs with >60% circumferential involvement [5]. Thus it is a late symptom and many patients presenting due to dysphagia are necessarily late [5,6]. Dysphagia occurs later in AC. Weight loss is the next common symptom and occurs from direct effect of the presence of the tumor and from resultant malnutrition with loss of ability to swallow.

In Africa there are incidence clusters around Central, South and West Africa regions [3,5,7].

In sub Saharan Africa, there are reports of higher incidence where local alcohol brew is significantly consumed [8,9]. This together with other risks factors from diet, poor socioeconomic and soil factors are regarded as prominent [10,11,12]. In the Niger Delta, these risk factors exists, hence it would not be surprising if there is indeed a high incidence of cancers amongst the indigenous, poor here. These areas appear to have an increased presence of the factors associated with oesophageal cancer. Notably among this is alcohol use. Histological reports from this region show that SC is the main subtype [3,4,7].

There appears to be some racial predilection for development of SCC in blacks, with African Americans also showing increased incidence [11,12]. Adenocarcinoma is the predominant variant worldwide<sup>1</sup> with increasing association with gastric and cardiac tumours [13], whereas squamous cell carcinoma appears more prevalent in Africa [2].

The Niger Delta region is the main base for crude oil exploration in Nigeria [14] and the area has witnessed increasing environmental pollution from this extractive industry [15]. The soil, air and fauna have been adversely affected by this pollution [16,17]. Is there an increased risk of cancer in this region? Many have postulated and indeed research findings suggest that pollutants and toxins abound within the environment [18,19] there but it remains to be seen whether population based studies would show this [14].

### 1.1 Aim of our Study

We mean to ascertain the hospital incidence and epidemiology of histologically confirmed patients presenting with oesophageal cancer.

**2. PATIENTS AND METHODS**

This is a retrospective study spanning from January 2008 to December 2014. It involves the review of clinical records and histological reports of all histologically confirmed cases of carcinoma of the oesophagus. The data were gleaned from the clinical records and other reports of investigations including histological reports. Data gleaned included age, gender, relevant history of oesophageal disease, barium study films and report, CT scan and histology reports. They were then entered into the Statistical Package for Scientific Solutions SPSS version 21 and analysed. The results were represented as frequency tables, charts and contingency tables with 95% Confidence Interval (p-values <0.05 considered as significant).

All histologically confirmed cases of carcinoma of the oesophagus were enrolled in the study. Cases whose records were incomplete, or histology not done or unavailable were excluded from the study.

Oesophagoscopy was routine in all patients and biopsy was performed under direct vision with 4-6 bites using the biopsy forceps in areas with evident involvement of lesions seen at endoscopy. There were no attempts made at grading the tumor obstruction. Staging of the cancer was done using the TNM classification.

The years 2013 and 2014 witnessed Doctors and Nurses strike that foreclosed clinical activities for over 10months during the period which invariably affected patient load within those periods.

**3. RESULTS**

A total of 42 cases were enrolled in the study. The male: female ratio was 2.2:1.

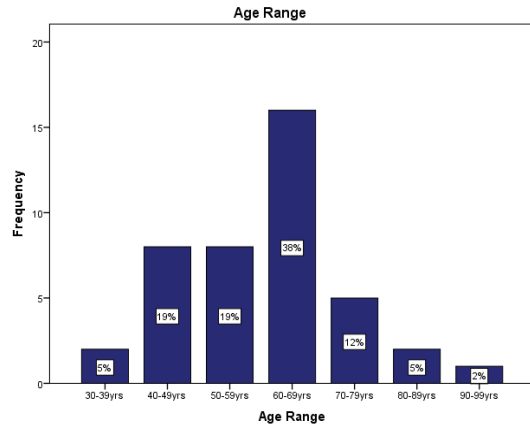
The mean age was 60.1 years, with the mean male age being 62.3 yrs and female 55.1 yrs (Fig. 1).

All patients presented with dysphagia and 92.9% had some weight loss, with 31% presenting with cachexia (Table 1).

A greater percentage of patients (83.3%) were from the Niger Delta area, residing at the riverine areas (Table 1).

54.8% were documented to use local gin (Table 1).

85.7% of patients presented with stage 4 disease (Table 1).



**Fig. 1. Showing the age range of the patients**

The histological type were squamous cell carcinoma occurring in 85.7% and 14.3% being adenocarcinoma (Table 2).

The tumour was mainly located in the mid portion of the oesophagus 59.5% and 35.7% were located at the lower oesophagus and gastro-oesophageal junction with only 4.8% at the upper thoracic and cervical oesophagus (Table 2).

All had oesophagoscopy and biopsy done either in the endoscopy suite (awake or conscious sedation) or in the theater.

Oesophageal intubation was only feasible in 7patients (16.7%) with only 3(7%) patients having oesophagectomy with gastric pull-up.

**Table 1. Showing the clinical features and characteristics of patients**

Clinical features/factors	Frequency	Percentage
Dysphagia	42	100
Weight loss	39	92.9
Cachexia	13	31.0
Cough	12	28.6
Tracheo-oesophageal fistula	3	7.1
Cigarette use	12	28.6
Local gin	23	54.8
Delta State	32	76.2
Edo State	10	23.8
Stage III	4/28	14.7
Stage IV	24/28	85.3

#### 4. DISCUSSION

The mean age of our patients were in keeping with other studies in Africa [2,3,4,7]. It is essentially a disease of the 5<sup>th</sup> and 6<sup>th</sup> decade. Whilst the age range in our series tallied with other studies in Nigeria; namely Lagos and Ibadan [3,7], there was a predominance of males in our study. The reason for this is not immediately evident but may be associated with the overwhelming use of native gin within the male population [9,11]. It is also pertinent that our series of 42 histologically confirmed cases is higher than that reported elsewhere in Nigeria. Could there be an incidence cluster within the Niger Delta region? This question can be best answered by a population based study [10].

Dysphagia was the main symptom at presentation, with many coming down with total dysphagia and cachexia. Dysphagia is essentially a late symptom [2] and thus patients with it tend to come with stage 3 or 4 disease [2]. Our patients with dysphagia and weight loss further emphasis the need for early presentation which is essentially difficult with carcinoma of the oesophagus. The early symptoms and signs may appear trivial to patients and thus they either delay or are misdiagnosed and treated as other per milder ailments. The few numbers observed in our study may not qualify for population based study in the midst of scarce resources available for health, however it is not unlikely that the patients we are seeing in the tertiary center are a tip of the iceberg.

The incidence of reflux disease, Barret oesophagus are low in our population and thus may account for low incidence of adenocarcinoma [20]. The predominant histological type was squamous cell carcinoma. This histological subtype seems the more prevalent in Nigeria as attested to by studies from other centers [3,4,7]. Its correlation with alcohol abuse is tenuous though established in

other studies but would require further study to clarify.

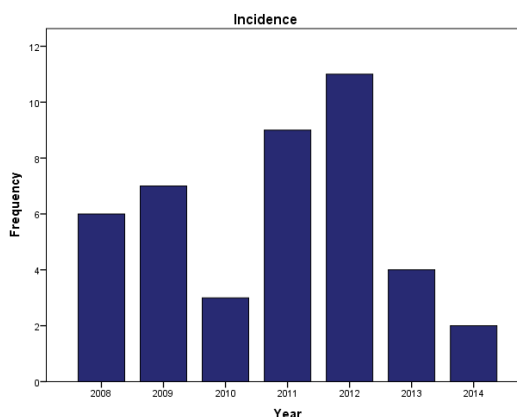


Fig. 2. Showing the yearly incidence

The tumour was mainly in the mid-thoracic oesophagus which is the same findings in other studies done in Nigeria [3,4,7]. At this position, the tumour commonly invades the hilum of the lungs, the aorta and base of the heart as well as the lungs and pericardium. Thus many of the patients present with late disease. This further gives a grim outlook for this disease.

Most of our patients were living and working in the Niger Delta region. This region in Nigeria has witnessed major oil spills and environmental degradation through the activities of oil exploration [14,16]. The evident pollution of the environment with multiple crude oil spills and contamination of the soil and water sources is a thing of concern and may indeed bear a relation to why there were more cases of oesophageal cancer from those riverine communities [18]. Studies have shown the presence of toxins within the water and soil of these communities [18,19] but further work should clarify if indeed it could be a risk for development of oesophageal cancer.

Table 2. Showing the frequency distribution of the tumour position

Histology	Tumour site			Total (%)
	Upper oesophagus	Mid-oesophagus	Lower oesophagus	
Squamous Cell Carcinoma (SCC)	2	22	8	32(76.2)
Squamous papilloma	0	3	1	4(9.5)
Adenocarcinoma	0	0	6	6(14.3)
Total	2(4.8)	25(59.5)	15(35.7)	42(100)

Pearson Chi Square = 18.729; df = 4; P = 0.001

**Table 3. Showing the mean age of the patients according to the histological diagnosis and gender**

Gender	Histology	Mean age (years)	Number	Std. deviation
Female	Adenocarcinoma	44.50	2	9.192
	Papilloma squamous cell	64.33	3	14.295
	Squamous cell carcinoma	54.25	8	14.479
	Total	55.08	13	14.280
Male	Adenocarcinoma	65.40	5	11.459
	Papilloma squamous cell	66.00	1	.
	Squamous cell carcinoma	61.52	23	12.350
	Total	62.34	29	11.887
Total	Adenocarcinoma	59.43	7	14.339
	Papilloma squamous cell	64.75	4	11.701
	Squamous cell carcinoma	59.65	31	13.086
	Total	60.10	42	12.952

Anova 2.356;  $P = 0.134$

From our study late presentation was the rule rather than the exception, with many presenting when they were not even fit for chemotherapy [3,4]. This may be due to multiple cofounding factors including access to healthcare, poverty, and the trivialization of early symptoms by patients and relatives [3]. This is not surprising since many of our patients engage in self-help and utilize unorthodox healthcare workers and these constitute delay in their presentation. The picture is worsened by the fact that the oesophagus has no well-formed serosal covering, thus the tumor quickly spreads to adjacent organs and metastasizes early [1,3]. These combine to produce a grim prognosis.

Oesophageal cancer is not the most prevalent gastrointestinal cancer [21], however due to the very late presentation, palliation is the main stay of treatment [6,22]. Our operative rate was low as a result of the patients presenting with stage four disease. Genetic studies are lacking in Africa, and it is possible that there are glaring dissimilarities with the epidemiology of cancer of the oesophagus comparing Africans with Caucasians [23,24]. Further studies are indicated to answer these questions.

Most of our patients were from the riverine Niger Delta. It is important to identify common factors among these patients which include social habits like use of local gin and other environmental hazards as proximity to petroleum extracting industry. Low socioeconomic status is the rule within this tough environment with pervasive poverty. Whilst low socioeconomic status is an established risk factor [2]; its combination with ingestion of locally brewed spirits [2,4,9] and exposure to toxins from crude oil spills [14] and

hazardous waste from the crude oil exploration [17] all combine to invariably increase the risk of developing cancers.

## 5. CONCLUSION

Oesophageal carcinoma in our environment is principally squamous and in the middle third of the thoracic oesophagus. Most patients present late with palliation being the only feasible treatment.

## CONSENT

This is a retrospective review and no contacts with patients. Ethical review committee approval to protect patients' data received.

## ETHICAL APPROVAL

Ethical approval was taken from the University of Benin Teaching Hospital Ethical Review Committee.

## COMPETING INTERESTS

Authors have declared that no competing interests exist.

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