

A 20 year histopathological review of cancer of the oesophagus in Jos, Central Nigeria

* Mandong BM *Ngbea JA and **Madaki AJK

*Department of Pathology, Jos University Teaching Hospital, Jos, Plateau State, Nigeria and

**Department of Family Medicine, Jos University Teaching Hospital, Jos, Plateau State, Nigeria

Abstract

Background: Oesophageal cancer believed to be rare in Africa is now assuming prominence in cancer incidence. Studies in some parts of the world showed that Blacks are at higher risk of oesophageal cancer than non-Blacks.

Aim: Is to describe the pattern of distribution of oesophageal cancer in our environment. The study will provide the basis for further epidemiological studies.

Material and Methods: This was a hospital based study. Records of histologically confirmed cases of oesophageal cancer over a period of twenty years were analysed. The sex and age of the individual patients were obtained from the referral forms.

Results: There were a total of 33 cases of oesophageal carcinoma recorded during the study period. This accounted for 1.3% of total cancer over the same period and 7.1% of gastrointestinal cancers. Out of the 33 cases, 22 (67%) were squamous cell carcinoma and 11(33%) were adenocarcinoma. Twenty five were males and 8 females with a male, female ratio of 3:1. Majority of the patients presented with the clinical symptoms of oesophagitis, severe dysphagia and weight loss.

Conclusion The study showed that carcinoma of the oesophagus affects males predominantly. Adenocarcinoma occurred in high proportion similar to reported cases from countries of America and Europe.

Key words: Oesophagus, Adenocarcinoma, Squamous cell carcinoma, Dysphagia, Central Nigeria

Introduction

Cancer of the oesophagus, which constitutes 6% of gastrointestinal cancers has a worldwide distribution^{1,2}. Studies have shown that Blacks throughout the world are at higher risk than

the whites^{3,4}. Most countries have an incidence of less than 10 per 100,000 population for males and below 5 per 100,000 population for females². There have been report of high incidences of oesophageal cancer in the regions

Correspondence to: Dr BM Mandong, P.O.Box 887, Jos, Plateau state, Nigeria E-mail: mafala2004@yahoo.com

No conflict of interest have been declared by the authors

Annals of Tropical Pathology Vol. 5 No. 2 December, 2014

of China, black population of South Africa, Central States of South America and part of the former Soviet Union^{4,5}. This cancer has male preponderance ranging from 2:1 to 20:1^{1,2}. However, female predominance has been reported for Sri-Lanka and Northern Iran. In these countries, the unusual sex incidence ratio varies from 12:1 to 2:1^{6,7}

In Africa, Transkei, (South Africa) has the highest incidence of 50 or more per 100,000 population^{3,5,8}. Due to the clustering of this cancer in certain region of the world, aetiological factors associated with life style, environmental and nutritional factors have been strongly linked with the cancer.^{1,5,7} In the Republic of Transkei for example, stored maize, which is a staple food, often has fungal growth which is carcinogenic. Moldy fruits and maize kernel which are used to improve the flavour of home-made beer, and the locally grown tobacco is common among the native black population which shows a high incidence of oesophageal cancer^{3,8,11}. Nitrosamines and zinc have been documented to be carcinogenic in experimental animals^{5,9}.

In Sri-lanka, betel chewing has been implicated in areas where females are more frequently affected. Similarly in Iran female frequency rate has been reported to be high and compounds of N-nitrosamine groups have been found in the special "pregnancy" diet which is widely used.

Analysis of alcoholic drinks in Central Africa revealed high contents of zinc and dimethylnitroamine^{1,8}. Paradoxically zinc deficiency has been associated with cancer of the oesophagus^{9, 10, 11}. Other micronutrient deficiencies have also been implicated one time or the other.

The purpose of this study is to describe the pattern of distribution of oesophageal cancer

in our environment. The study will provide the basis for further epidemiological studies.

Materials and Methods

Study Area

Jos University Teaching Hospital (JUTH) has over 500 beds with 20 wards in addition to intensive care unit (ICU) and special care baby unit (SCBU). It has a well functioning histopathology laboratory that receives and processes over 2000 tissue samples and over 1000 cytology specimens annually. It receives specimens from north central region of Nigeria comprising of about 6 states with a population of over 20 million people.

Method

This is a hospital based retrospective study. The materials consisted of records of histologically confirmed cases of carcinoma arising from the oesophagus, between 1985 and 2004 inclusive. All slides were reviewed and fresh sections were made from tissue blocks (where the slides were not available) and stained with haematoxylin and eosin. The age and sex of the individual patients were obtained from the referral forms. The data was then analysed.

Results

There were a total of 33 cases of oesophageal carcinoma within the 20 year period. Within the period there were a total of 465 cases of

Table 1: Age and sex distribution of oesophageal cancer

Age group (yrs)	Male	Female	Total
20-29	1	0	1
30-39	3	0	3
40-49	3	2	5
50-59	8	3	11
60-69	10	3	13
Total	25	8	33

Table 2: Signs and symptoms of 20 patients with oesophageal cancer

Signs and symptoms	Male	Female	Total
Dysphagia/weight loss	11	4	15
Dysphagia only	4	1	5
Total	15	5	20
Endoscopic findings			
Ulcer/stricture	11	4	15
Mucosal thickening	4	1	5
Total	15	5	20

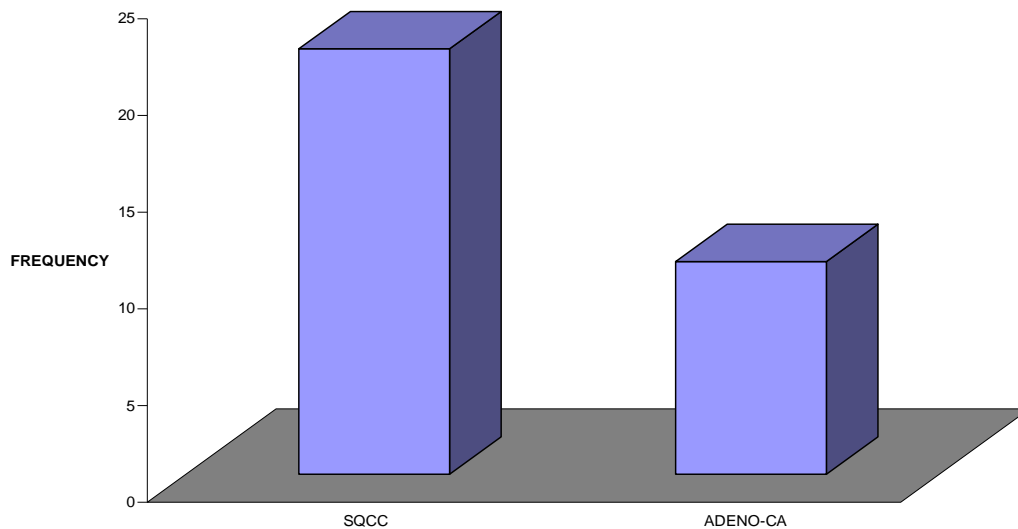


Fig. 1: Distribution of the two types of oesophageal carcinoma

(SQCC=squamous cell carcinoma; ADENO-CA= adenocarcinoma)

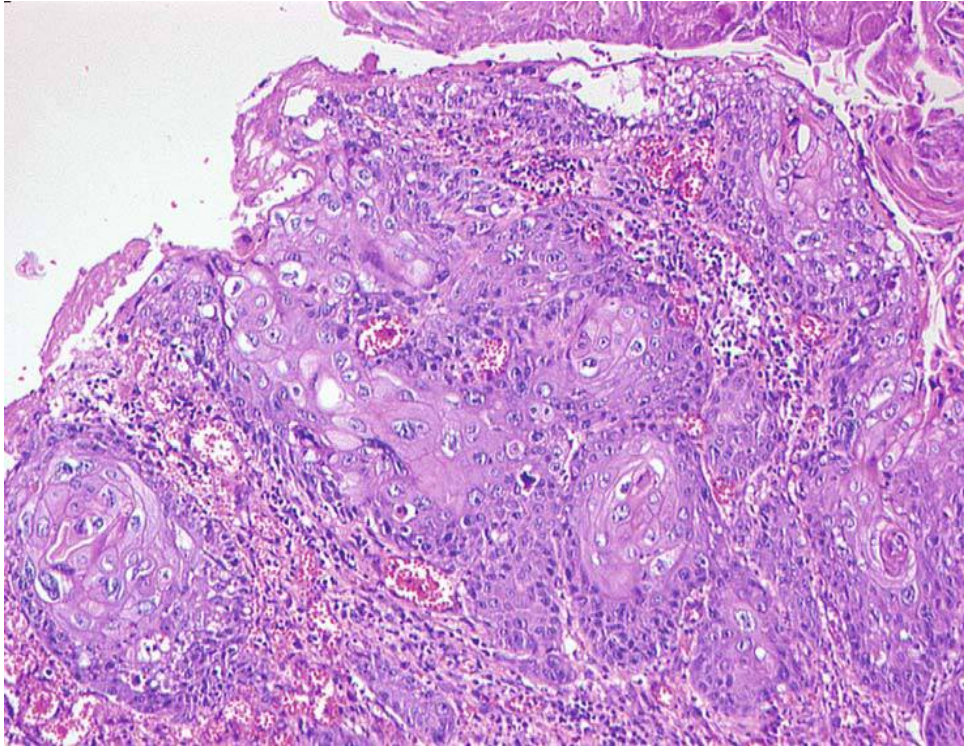


Fig. 2: Photo-micrograph of well differentiated squamous cell carcinoma (H &E stain. X 20 objective)

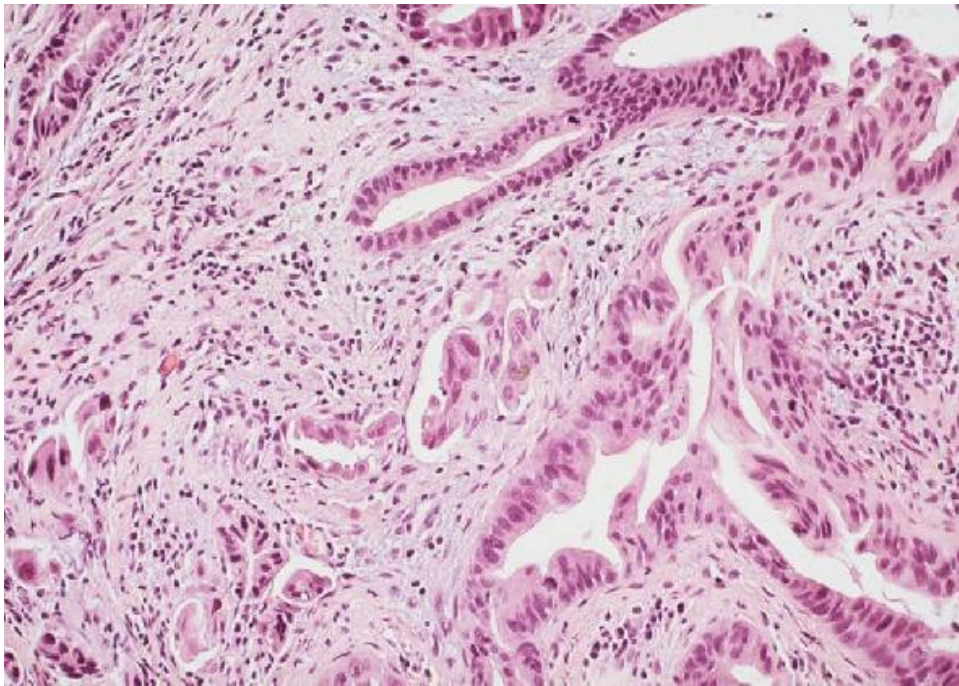


Fig. 3: Photo-micrograph of adenocarcinoma of the oesophagus and intestinal metaplasia (H&E stain. X 20 objective)

gastrointestinal cancers out of which oesophageal carcinoma accounted for 7.1%. Out of the 33 cases, 22 (67%) were squamous cell carcinoma and 11(33%) were adenocarcinoma. Twenty five of the cases were males, while there were 8 females (M: F, 3:1). Table 1 shows age and sex distribution of the cases; the highest proportions were in the fifth and sixth decades.

Table 2 shows the signs and symptoms of 20 patients with the cancer of the oesophagus. Almost all the patients gave history of retrosternal pains for years. Figure 1 shows the distribution of the two types of oesophageal carcinoma seen in this study.

Figures 2 and 3 show the photo-micrograph of squamous cell carcinoma of the oesophagus, and adenocarcinoma of the lower oesophagus with intestinal metaplasia respectively.

Discussion

Oesophageal carcinoma thought to be rare has a worldwide distribution and is reported to be more common in the black race^{1,2}

We present for the first time histological documentation of oesophageal carcinoma in our centre. The 33 cases of oesophageal cancer represented 1.3% of total cancers and 7.1% of gastrointestinal malignant tumours. Studies from America and Europe reported that oesophageal carcinoma represented 4-6% of gastrointestinal cancer^{9,10,11}.

The present study showed male preponderance (M:F,3:1). However, all over the world the male to female ratio range from 2:1 to 20:1^{6,7,8}. A reversal of this ratio has been recorded in Sri-lanka and Northern Iran where it was reported to be 1:5, male: female ratio. In Sri-lanka, women are reported to be practicing betel chewing which is believed to

contain carcinogens. Similarly special diets of Iranian pregnant women have been reported to contain high contents of nitrosamine which is also known to be carcinogenic in experimental animal^{1,2,8}.

The highest incidence of oesophageal carcinoma was reported from countries of United Kingdom^{7,9}. In Africa the report of incidence excluded West Africa where the epidemiological information is very scanty^{12,13}.

Out of the 33 cases of oesophageal carcinoma, 11(33%) of these were adenocarcinoma and 22(67%) were squamous cell carcinoma. The incidence of oesophageal adenocarcinoma has been on the increase for the past 20 years in the Western world and is believed to surpass that of squamous cell carcinoma^{7, 9, 10}. Histologically, oesophageal cancer had received considerable attention, however most of this attention has been focused on squamous cell carcinoma rather than adenocarcinoma^{7,8,10} in America it is reported to be higher in blacks than non-blacks^{9,11}.

The pathogenesis of oesophageal adenocarcinoma is speculated to be associated with gastro-oesophageal reflux and Barrett's metaplasia^{7,9,10}. It is now widely accepted that oesophageal adenocarcinoma does not develop de-novo, but rather along a sequence of phenotypic and genetic alterations that have been termed metaplasia-dysplasia-neoplasia sequence^{9, 10}. Gastro-oesophageal reflux is reported to be common in up to 30% of the European population who are reported to be expressing the symptoms every month^{10,14,15}. However, there is no conclusive report from Africa where similar reports were recorded^{1,8, 10}.

Squamous cell carcinoma accounted for 67% of the carcinoma in this study. There has been a lot of research focus on squamous cell carcinoma. High incidences have been

reported from China, Japan, South Africa and the continent of South America^{1,2,4,5}. Human papilloma virus DNA has been found very frequently in the squamous cell carcinoma of the oesophagus in regions with high incidence of the cancer. Genetic mutation of p53 has also been reported to be frequent in both adenocarcinoma and squamous cell carcinomas^{9,14}.

Carcinoma of the oesophagus is not rare in central Nigeria as previously believed. This study has shown that adenocarcinoma occurred in high proportion which is similar to reported cases from America and Europe. This may be a reflection of the changes in social habits.^{14,15}

Acknowledgement

The authors are grateful to Mr. James Goyit of the cancer registry for compilation of the records.

References

1. Mukta MW and La IT., Carcinoma of the oesophagus and colon *in vitro* models for cancer research CRC SERIES 1985: 1:4-7
2. Day NE and Munoz Zn. Esophagus, Cancer Epidemiology and Prevention: Schottenfeld and Fraumeni, JF eds, w b. Philadelphia 1982: 596-600.
3. Rose, EF: Esophageal cancer in tnaskei. The pattern and associated risk factors, in cancer of the oesophagus, CRC PRESS, 1982; 2: 19-25
4. Yang, CS. Research on esophageal cancer in China, Review, Cancer Res 1980, 40: 2633-2640.
5. Vanrenberg S.J. Epidemiology and dietary evidence for specific nutritional predisposition for esophageal cancer. J Natl. cancer Inst. 1981: 67: 243-248.
6. Daly. J M, Karnell LH and Menck, H A. National cancer data base report on esophageal carcinoma. Cancer 1996; 78: 1820-1828.
7. Daughlas AC and Patricia AB. Oesophageal and gastric cardiac adenocarcinoma: Analysis of Int. J Epid 2001, 30: 1415-1425.
8. Edington M H and Gilles HM. *In Pathology in the tropics* ED GM Edington, HM Gilles Edwards Arnold 1976, 535-537.
9. Chen Liu and James MC. The gastrointestinal tract. *In* Robins and Cotran Pathologic basis of Disease Ed Kumar, Abbas, Faujto. Elsevier Saunders 7th ed 2004 Chp. 17 ; 806-810.
10. Devesa SS, Blot Wj and Fraumeni JF Jr. changing pattern in the incidence of esophageal and gastric carcinoma in the USA Cancer 1998: 83: 2049-2053.
11. Blot WJ and Mclaugh JK. Smoking prevalence of esophageal cancer. Semin oncol 1999, 26: 2-8.
12. Mandong B M, Madaki A J K and Manasseh AN, Malignant disease in Jos: A follow up Annal of African Medicine 2003; 2: 49-53.
13. Ogunbiyi JO, Epidemiology of cancer in Ibadan. Achieves of Ibadan Medicine 2000; 1: 7-12.
14. Jankowski JA, Perry 1and Harrison RF, Gastro-oesophageal cancer: Death at the junction. Br. Med. J 2000; 321; 463 – 464.
15. Macdonal CE, Wicks AC and Playford RJ. Final results from 10 year surveillance for Barrett's oesophagus. Observational study. Br. Med. J 2000: 321: 1252-1255.