

RESEARCH PAPER

**HISTOLOGICAL PATTERN OF LARYNGEAL CANCERS IN
KOMFO ANOKYE TEACHING HOSPITAL**

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ABSTRACT

Carcinoma of the larynx is one of the commonest malignant tumours of the upper respiratory system. The main objective of this study was to highlight the histological pattern and evaluate the occurrence of the malignant tumours of the larynx. This was a retrospective study involving 146 patients aged between 36 to 77 years with an average age of 59.7 years. Patients with symptoms and signs of laryngeal tumour were studied at the Komfo Anokye Teaching Hospital, Kumasi for a 10 year period from 2003 to 2012. Biopsies of suspected cases were taken and sent to the Histopathology Laboratory for histological analysis. The study revealed that there was a high occurrence of squamous cell carcinoma resulting in 92.0% of the patients. This was followed by verrucous carcinoma in 3.4% of the patients, adenocarcinoma and adenoid cystic carcinoma in 1.7% of the patients. Lastly, there was neuroendocrine carcinoma in only one patient (0.9%). This study confirmed histologically that the squamous cell carcinoma was the most frequently manifested tumour of the larynx.

Keywords: *Larynx, Cancers, Histology, Carcinomas*

INTRODUCTION

Laryngeal cancer is the second most common type of head and neck cancer worldwide (Chu and Young, 2008). Laryngeal cancers comprised 2-5 % of all malignant diseases diagnosed annually, with the male-to-female ratio of 5-20: 1 (Jemal *et al.*, 2004). Epidemiological data suggest that the aetiology and pathogenesis laryngeal carcinomas are influenced by environmental and lifestyle-related factors such as

tobacco use, alcohol consumption and exposure to toxic substances. In addition, dietary factors, irradiation, human papilloma virus infection and laryngopharyngeal reflux seemed to be significant carcinogenic factors.

The majority of laryngeal cancers are related to smoking and /or alcohol abuse. Heavy smoking and a low intake of vegetables and fruits increase the risk of laryngeal cancer 19- fold

over that observed in non-smoking individuals who have a good intake of vegetables and fruits (Gallus *et al.*, 2003).

Garavello *et al.* (2006) reported that the higher the percentage of alcohol consumption, the higher the incidence of developing laryngeal cancers. Edefonti *et al.* (2010) also reported in Milan (Italy) that the diets rich in animal products and animal fats are directly related and those rich in fruits and vegetables are inversely related to laryngeal cancer risk.

In the United States of America approximately 12,500 new cases are diagnosed each year (Parkin *et al.*, 2005). Wünsch (2004) reported of around 8,000 new cases of laryngeal cancers occurring annually in the Brazilian population. In Canada 128 individuals in the province of British Columbia were identified as new cases in 2009 (BC Cancer Agency, 2012) whereas, 2,200 people in United Kingdom were diagnosed as laryngeal cancers in a year (Cancer back-up U.K., 2007). Cappellari (1997) reported of squamous cell carcinoma as being the most frequent histological type of laryngeal cancers.

Amusa *et al.* (2011) in Ile-Ife, Nigeria conducted a similar study by reviewing 13 cases of laryngeal cancers. The patients were aged 38-88 years with a mean age of 69.9 years and the male -to- female ratio was 12:1. From their review, squamous cell carcinoma was identified in all the 13 cases. Iseh *et al.* (2011) also conducted a similar study in Sokoto (Nigeria) by reviewing 30 cases of laryngeal cancers. The male -to- female ratio was 5.7:1 and squamous cell carcinoma was identified in 66.7% of cases.

Olofsson and van Nostrand (1977), Del Negro *et al.* (2007), Zvrko and Golobović (2009) reported of sporadic cases of adenoid cystic carcinoma. This accounts for less than 1.0% of all malignant tumours of the larynx. Javadi *et al.* (2002) reported of a 12 year old boy with adenoid cystic carcinoma in Tehran (Iran). Ferlito

and Recher (1980) reported in Padua (Italy) of an incidence rate of 3.2% of verrucous carcinoma. Varshney *et al.* (2004) also reported of an incidence rate of (0.7% - 1.0%) of verrucous carcinoma in all laryngeal cancers.

Even though not much has been reported in Ghana, a similar retrospective study was conducted on 115 patients at the Korle Bu Teaching Hospital (KBTH), Accra, from January, 1998 to December, 2003 (Kitcher *et al.* 2006). In their study, squamous cell carcinoma was identified in 88.7% of the cases, whereas adenocarcinoma was found in 1.7%, spindle cell carcinoma in 1.7% and 6.1% were defined as unspecified.

This is the reason why this study was conducted to identify the histological pattern of laryngeal cancers within our environment.

MATERIALS AND METHODS

This was a retrospective study conducted at the ENT Department and the Pathology Department of the Komfo Anokye Teaching Hospital (KATH). The study involved the histological review of patients who had been diagnosed as cases of laryngeal cancer between January 2003 and December 2012 inclusive.

Data were obtained from the hospital records which included the age and gender, whilst their histological slides were reviewed. Also reviewed were histopathological reports received from other laboratories other than KATH. All the slides reviewed were stained with haematoxylin and eosin. The slides were read by the pathologist at the Pathology Department (KATH) using an Olympus Microscope BXO with a magnification power of (x 10-20). The data collected was entered into the Statistical Package for the Social Scientist (SPSS) 16.0 for Windows Product. The patients mean age, male -to-female ratio, gender percentages, the age group percentages and the histological presentation of the various slides were determined.

RESULTS

In all 162 slides were retrieved but only 146 were employed for the study. The remaining sixteen slides were rejected because they were not technically well prepared. Of the rejected 16 slides four of them were from KATH whereas the remaining 12 were from other laboratories. Of the 146 review cases of laryngeal cancers, 122 (83.6%) were males whereas 24 (16.4%) were females and the male-to-female ratio was 5.1: 1 as shown in Table 1.

Their ages ranged from 36 years to 77 years, with an average age of 59.7±3.2 years (mean ±standard deviation). With regard to their age

group 2.7% were between 36 to 40 years, 4.8% were aged 41-45 years, 8.9% were aged 46-50 years, 16.4% were 51-55 years old and 18.5% were 56-60 years. With the rest of the patients 21.9% were 61-65 years, 13.1% were 66-70 years, 9.6% were 71-75 years whereas 4.1% were 76-80 years as shown in Table 2.

With respect to the 146 slides involved in the study 140 (95.9%) were prepared in KATH Laboratory whereas the remaining 6 (4.1%) were from other laboratories. The review of the slides and other histological reports from KATH and other laboratories revealed that squamous cell carcinoma resulted in 132 cases

Table 1: Gender distribution

Gender	Frequency	Percentage (%)
Male	122	83.6
Female	24	16.4
Total	146	100

Male-to-female ratio 5.1: 1

Table 2: Age distribution

Age group (years)	Frequency	Percentage (%)
36-40	4	2.7
41-45	7	4.8
46-50	13	8.9
51-55	24	16.4
56-60	27	18.5
61-65	32	21.9
66-70	19	13.1
71-75	14	9.6
76-80	6	4.1

Mean age 59.7 ± 3.2 years (Mean ± Standard deviation)

(90.3%), verrucous carcinoma in 6 (4.1%), adenocarcinoma and adenoid cystic carcinoma in 3 (2.1%) cases whereas neuroendocrine carcinoma resulted in 2 (1.4%) cases as shown in Table 3.

All those prepared from other laboratories resulted as squamous cell carcinoma.

DISCUSSIONS

Conventional squamous cell carcinoma is the most common histological type of laryngeal cancers. Nevertheless, it is important to be cognizant of the less common laryngeal malignancies because of their clinical behaviour and the concomitant implications for therapy.

Laryngeal cancer was most frequent in males than in females. In this study, there was a male-to-female ratio of 5.1:1, whereas Amusa *et al.* (2011) reported of 12:1, Iseh *et al.* (2011) also reported of 5.7:1 whereas Jemal *et al.* (2004) also reported of 5-20:1. The higher incidences in males than females may be due to the fact that males are more used to alcohol abuse and smoking than females which are some of the contributory factors in the development of laryngeal cancers in our environment. The average age of the patients in this study was 59.7 years, Amusa *et al.* (2011) also reported of 69.9 years in their study. This showed that laryngeal cancers often manifested in the fifth to sixth

decade of life.

In this study squamous cell carcinoma was identified in 90.3% of all the cases, whereas Kitcher *et al.* (2006) reported of an incidence of 88.7%, Amusa *et al.* (2011) identified 100% in their study and Iseh *et al.* (2011) also identified 66.7%.

In this study verrucous carcinoma was the second commonest histological presentation of laryngeal cancers. This condition occurred in 4.1% of the cases, whereas Ferlito and Recher (1980) reported of an incidence rate of 3.2% and Varshney *et al.* (2004) also reported of an incidence rate of (0.7-1.0) %.

Adenocarcinoma and adenoid cystic carcinoma were each identified in 2.1% of the cases whereas Kitcher *et al.* (2006) also reported of an incidence of 1.7%. Olofsson and van Vostrand (1977), Del Negro *et al.* (2007), Zvrko and Golobović (2009) all reported of an incidence rate of less than 1.0% in their respective studies. This supports the fact that adenocarcinoma and adenoid cystic carcinoma are of rare occurrence.

CONCLUSION

Laryngeal cancer constitutes 2-5 % of cancers of the head and neck and is the second most common cancer. There are various histological

Table 3: Histological pattern of laryngeal cancers

Histological pattern	Frequency	Percentage (%)
Squamous cell carcinoma	132	90.3
Verrucous carcinoma	6	4.1
Adenocarcinoma	3	2.1
Adenoid cystic carcinoma	3	2.1
Neuroendocrine carcinoma	2	1.4

types of laryngeal cancers but squamous cell carcinoma seemed to be the most predominant. Laryngeal cancers are more associated with certain social factors and addictions. Excessive use of alcoholic beverages, smoking and consumption of animal products and fats may be some of the risk factors whereas fruits and vegetables have been found to reduce the risk of developing laryngeal cancers.

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