

Laryngeal carcinoma: Experience in Ile-Ife, Nigeria

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Abstract

Objectives: This study aimed to determine the prevalent age, pattern of presentation, histopathology type, and outcome of management of laryngeal carcinoma in our environment.

Design and Setting: This was a 10-year retrospective study carried out at a teaching hospital.

Materials and Methods: Records of patients managed for laryngeal carcinoma from January 1994 to December 2004 were reviewed. Only 13 cases with tissue diagnosis were included in this review. The age, sex, occupation, presentation, use of cigarette and alcohol, investigations, histology, outcome of management, and duration of follow-up were extracted and analyzed.

Results: The patients had a mean age of 69.9 years (range 38–88 years) and a male-to-female ratio of 12:1. Histopathology was squamous cell carcinoma in all. Symptoms included hoarseness in voice and breathlessness in all, cough in 7 (53.8%), weight loss in 7 (53.8%), and otalgia in 6 (46.2%). Two patients indulged in alcohol and two were also regular cigarette smokers. All the patients presented with stage IV disease and in respiratory distress necessitating emergency tracheostomy. Seven (53.8%) patients had total laryngectomy plus postoperative radiotherapy while 2 (15.4%) had pharyngolaryngectomy, thyroidectomy, radical neck dissection plus postoperative radiotherapy and thyroxine supplement. Surgical complications included pharyngocutaneous fistula in 2 (15.4%) patients, pharyngeal stenosis, stomal stenosis, and hypocalcemia with hypothyroidism in 1 patient each. The fistulae were managed conservatively and prognosis was good despite late presentation.

Conclusion: Laryngeal carcinoma mainly occurs in males. Presentation is late with hoarseness in voice and breathlessness in our community. Soft-tissue neck x-ray is a useful diagnostic tool. Scarce radiotherapy centers, ignorance, local taboo, poverty, and poor recognition by primary healthcare providers have a negative impact on its management. Laryngeal carcinoma should be excluded when managing elderly patients for bronchial asthma.

Key words: Breathlessness, emergency tracheostomy, hoarseness, Laryngeal carcinoma

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Introduction

Carcinoma of the larynx, like other head and neck cancers, is among the most debilitating tumors in which early diagnosis remains the best predictor of survival.^[1] It is commoner in males and can be glottic, supraglottic, or subglottic, with the highest cure rate in glottic, followed by supraglottic tumors.^[2,3] In Spain, where carcinoma of the larynx is common, it accounts for 5.6% of all malignancies.^[4] During the period under review, carcinoma of the larynx accounted for 3.4% of head and neck cancers confirmed in our institution.

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In developing countries like ours, late presentation is a major problem in the management of most malignant diseases. Besides, misdiagnosis is another factor, which has been observed to have a negative influence on prognosis in laryngeal carcinoma.^[1] Effort is being made to find a useful marker to enhance early detection of this disease. Markers of alcohol abuse (GGT, VCM), which were earlier thought to be useful, have not shown correlation with any feature of this disease.^[5] Perhaps, the retinoblastoma tumour suppressor

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gene (Rb) may become useful to determine the presence of nodal metastasis in this disease in the nearest future.^[6]

With the recognition that early diagnosis remains the best predictor of prognosis in this disease and since no appropriate marker has yet been found for the early detection of this tumor, in the face of scarce facilities and personnel especially in developing nations, it becomes imperative that concerted efforts be made at increasing public awareness to ensure early presentation and enhance prompt recognition by healthcare providers. This for now remains the only useful weapon to aid in the effective management of this disease in developing countries.

This realization informed the need to determine the frequency, pattern of presentation, prevalent age, histopathology type, and outcome of management of this disease in our environment. This study was carried out at Obafemi Awolowo University Teaching Hospital Complex, Ile-Ife, Nigeria, which serves the needs of the rural and semiurban population of Osun, Ondo, Ekiti, and part of Kogi, Kwara, and Oyo States, all in the Southwestern Nigeria. This study is aimed at determining the frequency, prevalent age, pattern of presentation, histopathology types, and outcome of management of patients with laryngeal carcinoma in our environment and to compare our results with studies elsewhere.

Materials and Methods

The hospital records of patients managed for carcinoma of the larynx in our institution between January 1994 and December 2004 were reviewed retrospectively. Seventeen cases were clinically diagnosed and managed for laryngeal carcinoma during the period, but only 13 cases with tissue diagnosis were included in this review. The age, sex, occupation, social habit (cigarette smoking and alcohol consumption), presentation, investigations, tissue diagnosis, outcome of management, and duration of follow-up were extracted from the records and analyzed.

Results

The patients had a mean age of 69.9 years (range 38–88 years) with a peak incidence in the seventh decade. There were 12 male patients and one female.

Presentation

All the patients presented in respiratory distress with stage IV diseases, and were all receiving treatment for bronchial asthma from the referral centers. Hoarseness in voice and breathlessness were common symptoms in all the patients. Other symptoms were as listed in Table 1.

Social history

Two patients were regular cigarette smokers who took an

Table 1: Symptoms and duration of symptoms

Symptoms	No. of patients (%)
Breathlessness	13 (100)
Hoarseness	13 (100)
Weight loss	7 (53.8)
Cough	7 (53.8)
Otalgia	6 (46.2)
Dysphagia	3 (23.1)
Stridor	2 (15.4)
Odynophagia	2 (15.4)
Headache	1 (7.7)
Anterior neck swelling	1 (7.7)
Duration in (Months)	No. of patients (%)
3–6	2 (15.4)
7–12	6 (46.2)
13–18	2 (15.4)
24–36	2 (15.4)
>60	1 (7.7)
Total	13 (100)

average of 10 sticks per day over a period ranging from 6 to 50 years; three were casual smokers who took 0–3 sticks per day while eight patients never smoked cigarette. Two patients took alcohol regularly, nine were occasional alcohol users, and two patients had never taken alcohol. Four patients were clergymen, three were farmers, and one patient each was a teacher, soldier, trader, bricklayer, textile industry worker, and civil servant.

Investigations

A plain lateral neck radiograph proved very useful in demonstrating a soft-tissue mass obstructing the laryngeal lumen in all the cases.

Plain chest radiographs did not show any active lung lesion in all the patients.

The blood chemistry and full blood counts were within normal limits in all.

Direct laryngoscopy and biopsy revealed transglottic tumors with areas of necrosis in all the patients. In 2 (15.4%) patients, the tumor extended to the oropharynx (base of the tongue), the anterior neck, the strap muscles, and the thyroid gland.

Histopathology confirmed well-differentiated squamous cell carcinoma in all the patients.

The preoperative pulmonary function test confirmed an adequate pulmonary reserve in all the nine patients who had definitive surgery.

Operation

All the patients had emergency tracheostomy to relieve

airway obstruction on presentation. Only this palliative measure was possible in 4 (30.7%) patients who declined further surgical management. Seven (53.8%) patients had total laryngectomy plus postoperative radiotherapy while 2 (15.4%) had total pharyngolaryngectomy, thyroidectomy, and radical neck dissection plus postoperative radiotherapy and thyroxine supplement.

Surgical complications and treatment

They include pharyngocutaneous fistula in two patients, and pharyngeal stenosis, stomal stenosis, and hypocalcemia with hypothyroidism in one patient each. The fistulae were managed conservatively while the pharyngeal stenosis was corrected with a two-staged deltopectoral flap repair. Eight of the nine laryngectomees were able to achieve esophageal speech while the remaining one could not because of pharyngeal stenosis.

Duration of follow-up

Three patients have been followed up for 6.5 years, two patients for 4.5 years, one patient for 2 years and two patients for 2.75 years. One patient died 3 months after surgery from a ruptured carotid artery following postoperative radiotherapy while the remaining eight patients are still doing well. Four patients that declined definitive surgery and scheduled for radiotherapy were all lost to follow-up.

Discussion

Carcinoma of the larynx is one of the most debilitating human diseases. Like other head and neck tumors, the strategic location and the unique function subserved by the larynx accord an important clinical and social recognition to this tumor. The number of patients managed over a 10-year period in this report is similar to the number of patients managed over a 12-year period at Ibadan.^[7]

The age incidence of 38–88 (median 69.9) years observed in this series closely reflects the global age incidence of this disease.^[8] The existing literature showed a male preponderance in the epidemiology of this disease, though recent publications indicate an increase frequency in the number of women affected.^[9,10] The 12:1 male-to-female ratio observed in this series is close to 11:1 reported by Somefun *et al.* in Lagos, Nigeria, and by Lechuga *et al.* in Santiago.^[9,11] The male preponderance led to the speculation of different susceptibility of the tumor cells to steroid sex hormones. However, available data on the receptor status for androgens, estrogens, and progesterone in laryngeal carcinoma are controversial. A recent report by Hagedorn and Nenlich failed to demonstrate the presence of significant male and female sex hormones in laryngeal tumor specimens.^[12]

Although cigarette smoking has been identified as an

important etiologic and prognostic factor of this disease,^[1,3,13] only two patients in this series were regular smokers, while eight never smoked cigarette. A report from Ibadan also showed that 86% of the patients were nonsmokers.^[7] Alcohol has also been etiologically linked to this disease,^[2,9,13] but only two patients in this review were regular alcohol users. These findings suggest that cigarette smoking and alcohol consumption are not important etiological factors of this disease in our community.

Occupations of these patients could have played a role in the genesis of this disease because exposures to irritants/conditions that induce chronic laryngeal inflammation or irritation have been associated with laryngeal carcinoma.^[13] Voice abuse acting singly, or in combination with smoking or other irritants such as chalk, cement dust, etc., can induce chronic laryngeal irritation and predispose one to squamous cell metaplasia and laryngeal carcinoma. In this series, the four clergymen and the three teachers were exposed to prolonged voice usage, while the bricklayer and the textile worker were exposed to cement products and industrial wastes.

Hoarseness in voice and breathlessness presented by all our patients were the most common symptoms of laryngeal carcinoma earlier reported by Ratiola and his co-workers, and in this sub-region.^[3,14] Weight loss, cough, and otalgia were less common while dysphagia, stridor, odinophagia, headache, and neck swelling were uncommon. Referred otalgia, observed in six patients, is a useful guide in making early diagnosis in patients with a family history of laryngeal carcinoma.^[15]

Glottic tumors typically present earlier than supraglottic tumors.^[3] Hoarseness in voice, the earliest symptom in all our patients appearing 9–10 months before the onset of respiratory obstruction, suggests the early involvement of the vocal cord. It is also possible that the carcinoma could be glottic in origin that later spread and became transglottic due to neglect.

Besides direct laryngoscopy and biopsy, lateral soft-tissue neck x-ray was found useful and diagnostic in all our cases. This is important because it is cheap, relatively affordable, and within reach of majority of our patients, though it may not be helpful in early diseases. Ultrasonography and computerized tomography are also valuable and effective in the diagnosis of laryngeal carcinoma.^[16] Squamous cell carcinoma confirmed in all our patients reflects the common histopathology pattern of this disease.^[3,13]

Besides the major task of instituting curative therapy without compromising voice and swallowing functions, poverty, ignorance, and inadequate facilities and manpower pose additional challenges in the management of this disease in our community. Some of our patients initially rejected

tracheostomy because of local taboo and fear of breathing through a tube. Lack of fund was identified as a major cause of late presentation. Four patients declined surgery because of the cost and the wrong notion that patients were old enough to die.

Treatment options in laryngeal carcinoma depend on the stage of the tumor, expected voice quality, expected quality of life, and the preference of the management team.^[17] Radiotherapy is useful because squamous cell carcinoma, the main histological type, is radiosensitive, and because it preserves laryngeal functions. Early tumors (stages I and II) are preferably and effectively treated with radiotherapy. Total laryngectomy offers better results in advanced tumors, or when there is failure of irradiation therapy.^[18,19] Elective neck dissection is also advocated to improve survival and because of possible occult metastasis found in close to a quarter of patients with apparently N₀ nodal status.^[18,20] In this series, 7 (53.8%) patients had total laryngectomy while 2 (15.4%) had total pharyngolaryngectomy, thyroidectomy, and bilateral neck dissection and thyroxine supplement, with good results. Pharyngeal stenosis, pharyngocutaneous fistula, stomal stenosis, and hypocalcemia with hypothyroidism, recorded in this series, are known complications of these procedures.

Although total laryngectomy has been proven to be of value in the management of advanced laryngeal carcinoma, the need to preserve the laryngeal function has led to increasing preference for other conservative forms of management. Recent reports showed that partial laryngectomy is a good alternative to total laryngectomy. Besides, the preservation of the laryngeal function, it prevents emotional distress associated with permanent tracheostomy without compromising survival.^[1,21,22] Sequential chemoradiation also allows laryngeal preservation in over 65% of patients without compromising survival.^[23] In combination therapy, radical laryngectomy plus radiotherapy has been shown to be more effective in locoregional control compare to radiotherapy plus chemotherapy.^[24,25] Unfortunately, many of our patients could not undergo postoperative radiotherapy because of the high cost, scarcity, and a long waiting period.

The prognosis is good despite late presentation. Eight (88.8%) of the nine laryngectomies were able to achieve esophageal speech, and only one patient with pharyngeal stenosis and pharyngocutaneous fistula could not. One patient died from a ruptured carotid artery following radiotherapy 3 months after surgery, while the remaining 8 (88.8%) are still doing well with an average duration of follow-up of 58.5 months. Although the duration of follow-up is short, it is reasonably long enough for local recurrence to manifest. Tryka *et al.* showed that most local or nodal recurrence and distance metastases were evident within 11–22 months after surgery.^[26] Four (30.7%) patients who

declined definitive surgery were lost to follow-up.

In view of the local problems associated with radiotherapy, surgery may remain the sole treatment of this disease in our environment. With the good results now reported with partial laryngectomy,^[1,21,22] our emphasis for early tumors is toward partial resection. Less than 2% of American otolaryngologists still believe that total laryngectomy should be done for operable tumors.^[17] Apart from determining the prevalent age, pattern of presentation, and challenges of managing laryngeal carcinoma in our developing society, it is hoped that this article will raise awareness and assist in the early recognition and management of laryngeal carcinoma.

Conclusion

Laryngeal carcinoma occurs predominantly in males. Most of the patients present late with hoarseness in voice and breathlessness in our community. In developing nations where sophisticated facilities are lacking, soft-tissue neck x-ray is a useful diagnostic tool. Scarcity of radiotherapy centers, ignorance, local taboo, poverty, and poor recognition by general medical practitioners negatively affected the management of these patients. Laryngeal carcinoma should be excluded when managing middle-age and elderly patients for bronchial asthma.

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