Carcinoma of the Larynx in Malaysia

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Abstract

A retrospective study of cases with carcinoma of the larynx seen in the Universiti Kebangsaan Malaysia (UKM) and General Hospital Kuala Lumpur (GHKL) between 1981 to 1988 was performed. The aim was to document the distribution and the pattern of behaviour of this tumour amongst our patients. There were 137 cases, the majority of whom were Chinese (54%). The peak incidence was in the seventh decade and the male to female ratio was 7.6:1. The most common symptom at presentation was hoarseness (90%). The most common histological type was squamous cell carcinoma (87%) whilst by site, transglottic involvement was commonest (55%). The overall 3 year survival rate was 68%. Supraglottic carcinoma behaved differently in that a significantly large number presented with dysphagia (33.3%) and neck nodes (42%). Compared to tumours of other sites of the larynx, they had the poorest 3 year survival rate of 50%. Amongst the T2 and T3 tumours, the results of surgery appeared better than primary radiotherapy. Considering that 26% of patients presented with stridor, 20% with neck nodes and 55% with multiple site involvement, it can be concluded that our patients present themselves late.

Key words: Carcinoma of the larynx, Malaysia

Introduction

Carcinoma of the larynx occupies a special place in medicine. Its onset is heralded mainly by a change of voice. One expects early presentation, early diagnosis and prompt treatment. Indeed, the larynx is one of the few sites affected by carcinoma where cure is the expected norm when detected early. It therefore deserves special attention.

The incidence of carcinoma of the larynx is low. In men, it comprises 1% of all carcinomas[1] and in women, it is much less. Within the larynx the distribution is not uniform. Indeed, the various subsites of the larynx show variation in their presentation, tendency to metastasise and hence, survival rates. The importance of early diagnosis of cancer, in general, cannot be better illustrated than in the larynx. Early carcinomas in the glottis are associated with a 5 year survival rate in the excess of 90%[2]. On the other hand, late detection might mean losing the larynx (and with it, normal voice production), or agonizing slow death from a fungating mass in the neck.

In our institution, carcinoma of the larynx ranks amongst the 10 most common neoplasms. In oto-laryngology it is second only to nasopharyngeal carcinoma[3]. There is no previous study of this important tumour in Kuala Lumpur or elsewhere in Malaysia. The main objective of this study therefore is to improve our understanding of the various aspects of carcinoma of the larynx in our local context. In particular we wanted to study the epidemiology characteristics, the distribution according to site within the larynx, histology and stage of this tumour.

Methods and material

This retrospective study involves identifying diagnosed cases of carcinoma of the larynx registered with the pathology departments of UKM and GHKL between 1981 to 1988. The case records were then traced from the respective record offices and studied. These records were evaluated by 1 person, the main author, and confidentiality was strictly observed. As for the survival rates, the National Registry (Jabatan Pendaftaran Negara) was supplied the identity card numbers of each patient and the status of each patient was traced. The cause of death was also supplied by the same source. For this study, laryngeal carcinoma was defined as a malignant tumour arising within the larynx in accordance with rubric 161 of the International Classification of Diseases (ICD, 1977). The test of statistical significance used is the Chi squared test (as used in Microsta on an IBM compatible personal computer). Survival statistics were based on life tables.

The population for which this study is based upon is not confined to the Klang Valley. Both the UKM and the GHKL are National Referral Centres and therefore receive referrals from the whole country.

Results

Between 1981 and 1988, a total of 137 patients were diagnosed to have carcinoma of the larynx. The average number of new cases seen per year was 16. The ages ranged from 16 to 82 years. The average age was 60 years and the peak incidence was in the seventh decade of life. The sex ratio of patients with carcinoma of the larynx in this series was male:female = 7.6:1. The incidence of carcinoma of the larynx amongst ENT patients between 1985 and 1988 was 1:1,663. The incidence amongst total outpatient attendance over the same 4 year period is 1:66,317. The incidence prior to 1985 could not be obtained as the record office could not supply the necessary data. The Chinese form the majority of cases (54%), followed by Indians (23%) and Malays (19%) (Table I). In contrast, over the same period the majority of the patients attending the outpatient clinics of UKM and GHKL were Malays (48%) followed by Chinese (27%) and Indians (23%). This difference in ethnic distribution illustrates that there are significantly more Chinese affected by carcinoma of the larynx.

Table I
Incidence of Ca larynx according to ethnic groups

Race	Cases	Percentage (%)
Malay	26	19
Chinese	74	54
Indians	31	23
Others	6	4
Total	**137**	**100**

Table II shows that squamous cell carcinoma was, by far, the most common histological type in the larynx (86.9%).

Table III illustrates the distribution according to site. The majority of patients have a transglottic tumour (54.7%). Here, transglottic tumours were taken as tumours that traverse the laryngeal ventrical.

The main symptom on presentation was hoarseness which was followed by stridor and dysphagia (Table IV). The average duration of hoarseness was 9 months and this underlines the late presentation of our patients. According to site, dysphagia was a prominent symptom of supraglottic tumours while hoarseness was an important complaint in all subsites.

Table II
Distribution of cases according to histology

Histology	Number	Percentage
Squamous cell	119	86.9
Spindle cell	2	1.4
Verrucus	1	0.7
Mucoepidermoid	1	0.7
Not specified	14	10.2
Total	**137**	**100.0**

Table III
Distribution of cases according to site within the larynx

Site	Number	Percentage
Supraglottis	19	13.9
Glottis	41	29.9
Subglottis	1	0.7
Transglottic	75	54.7
Unspecified	1	0.7
Total	**137**	**100**

Forty-two percent of tumours of the supraglottis have nodal secondaries on presentation. In contrast, only 5% of glottic tumours present with nodes. These figures were tested with the Chi squared test and were found to be significant ($p<0.05$).

A 3 year survival rate was used, as a 5 year survival rate would effectively disqualify the majority of the cases in this study. Using a 3 year survival rate, only cases diagnosed in 1988 would be disqualified. This leaves a base population of 92 patients. The overall 3 year survival rate was 68%. The 3 year survival rates were 77%, 88%, 66% and 29% for T1, T2, T3 and T4 respectively. In all categories, the majority died within the first year of diagnosis.

There were 110 patients who presented without cervical lymph nodes (NO) while there were 21 with N1, 4 with N2 and 2 with N3 (Table VI). These numbers are too varied for a meaningful study of 3 year survival rates.

Table IV
Distribution of symptoms at presentation and their average duration.

Symptom	Number	Average duration (months)
Hoarseness	123	9
Stridor	35	2
Dysphagia	19	2

Table V
Distribution of symptoms according to site

Site	Symptoms		
	Hoarseness	Stridor	Dysphagia
Supraglottis	14	2	8
Glottis	40	5	0
Subglottis	0	1	0
Transglottis	68	28	10

Table VI
Distribution of nodal secondaries according to site

Site	Nodal status				Total with nodes	%
	NO	N1	N2	N3		
Supraglottis	11	6	1	1	8	42
Glottis	39	1	0	1	2	5
Transglottis	58	14	3	0	17	23

Discussion

Between 1981 to 1988 there were 137 cases in the Department of Otorhinolaryngology of the Universiti Kebangsaan Malaysia (UKM) and General Hospital Kuala Lumpur (GHKL). The peak incidence in our series was in the seventh decade of life and this was comparable to other studies[1,4]. Smoking and alcohol consumption are implicated in the aetiology of this tumour[5]. It seems that it is at the seventh decade of life that the accumulated effects of these social habits take effect. This compares well with carcinoma of the bronchus where again smoking is implicated. Cole quoted the peak incidence of carcinoma of the bronchus to be in the seventh decade of life[6]. However, the number of smokers and regular alcohol consumers amongst our patients could not be accurately determined as this was not documented in all the case notes.

The male to female sex ratio in this study was 7.6:1. This is comparable to other series[1,4]. Robin, in his monograph, quoted the sex ratio as 7.0:1, while Marck quoted 7.3:1. There was a significantly higher incidence amongst the Chinese (54%). This racial preponderance can also be seen in nasopharyngeal carcinoma (NPC). In NPC this has been extensively studied and a combination of factors has been implicated. Genetic predisposition[7], dietary habits especially smoked fish[8], and Epstein Barr viral infection[9] have been identified as contributory to the disease. On the other hand, while carcinoma of the larynx seems to be important amongst the Indians, NPC is very rare for this race. We believe there are multi factorial causative agents and further studies in this direction are required for carcinoma of the larynx.

The incidence in the Malaysian population, as explained earlier, could not be calculated. The incidence in the outpatient population of UKM and GHKL was 1.5 in 100,000. Muir et al (1987) published the World Incidence in the five continents and it ranges from 1.6 in 100,000 in the Scandinavian countries to 17.8 in 100,000 in Brazil[10]. Robin, in his monograph, quoted 2.7 in 100,000 for the West Midlands region in the United Kingdom[1].

The overwhelming majority of cases (87%) were squamous cell carcinoma. This is in agreement with other published series[1,4]. The other histological types include spindle cell carcinoma (pseudosarcoma),

verrucus carcinoma and mucoepidermoid carcinoma. Spindle cell carcinoma and verrucus carcinoma are variants of squamous cell carcinoma.

In our series, the most common 'site' of tumour involvement was the transglottic area (54.7%). This category was probably glottic carcinomas which have grown large to involve the adjacent sites. In most other series, the most common are the glottic tumours[1,4]. This again serves to underline the late presentation amongst our cases.

The most common symptom at presentation was hoarseness. This is not surprising as 84.6% of the cases in one category or another, involved the glottis. It was significant that the supraglottic carcinomas form the majority of those presenting with dysphagia. The supraglottis is closely-related to the 'food channel' of the hypopharynx and this explains the prominent symptom of dysphagia. Tumours of the hypopharynx present mainly with dysphagia whilst tumours of the larynx present mainly with stridor. Supraglottic tumours are the meeting place of these two tumours.

The supraglottis, like the hypopharynx, is richly supplied with lymphatics. Thus a significantly high number (42%) presented with cervical nodes. This may prompt us to consider treating the negative neck of supraglottic tumours with at least radiotherapy in conjunction with definitive treatment of the tumour.

In this study the survival time was calculated from the date of diagnosis. This enabled us to compare the progress of the disease according to site, tumour stage, nodal status and so on. For this study the 3 year survival rate was used instead of the more familiar 5 year survival rate because of the relatively short follow-up period.

The overall 3 year survival rate was 68%. This is comparable to the study by Robin, where the overall 3 year survival rate was 60.7%[1]. This overall survival rate, however, does not give a true picture of this carcinoma because the survival rates varied significantly when it was studied by subsites and by stage. This study showed that supraglottic carcinomas had the poorest 3 year survival rate of 50%. This is not surprising as 42% of these tumours presented with neck secondaries. This is in agreement with the study by Robin, whose 5 year survival rate for supraglottic carcinomas was 33.8%. Glottic carcinomas showed a 76% 3 year survival rate. This is again comparable to the same study quoted above, whose 5 year survival rate was 69.3%.

The 3 year survival rate for T1 and T2 are 77% and 88% respectively. It is rather surprising that the survival rate for T2 was better than T1. This anomaly may also reflect the difficulty in determining the accurate staging of a tumour based on retrospective study of case notes. Statistically, however, there was no significant difference in the above values. What was significant, however, was the poorer survival rates of T3 and T4 tumours which formed the majority of the cases in this study. For tumours staged as T1 and T2, our policy was to subject them to primary radiotherapy. The exception to this rule was when they had nodal secondaries. Surgery was then the mode of treatment.

Closer review of the cases with T2 tumours showed that 48% of patients who underwent primary radiotherapy have died of residual or recurrent tumour at the time of writing. In contrast, only 27% succumbed to their disease after primary surgery. The survival rates were not calculated as their numbers were too small (less than 22 in each category).

This trend of cases surviving better with primary surgery rather than primary radiotherapy becomes more evident in T3 tumours. Here, 80% of patients who underwent primary radiotherapy died of their disease compared to 37% who died after primary surgery.

In all cases, the minimum follow-up period was 2 years. The above result must be taken with caution because generally the more 'fit and healthy' candidate would be subjected to surgery while the 'surgically unfit' patient would be sent for radiotherapy. Certainly, a more detailed and prolonged study would be indicated to give a better view on the above subject.

Conclusion

The age distribution, sex ratio and histology of carcinoma of the larynx in Malaysia is similar to that found elsewhere in the world. However, due to the racial composition in our country, the predominance of this tumour amongst the Chinese becomes evident. Our patients present themselves late and therefore the commonest type of tumour by site is the large transglottic type. Although the overall survival rate is comparable to other large series, it is still poor. This potentially curable tumour declares itself early with hoarseness and the public must be made aware of the significance of this symptom.

Acknowledgement

I would like to thank Dr John Tan FRCS (Ed) for his advice in this study, Dr Phang Koon Seng DCP and Dr Thanaletchumy DCP of the Pathology Departments of UKM and GHKL respectively for supplying the necessary identification data on patients with carcinoma of the larynx. I would also like to record my appreciation to Mrs Rosilawati of the National Registration Department for supplying the survival data of the cases.

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