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Original Research Article

A Retrospective Observational Assessment of the Factors Related to Poor Prognosis and Overall Survival Rates in Patients Diagnosed with Laryngeal Squamous Carcinoma

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Abstract

Aim: The aim of the study was to factors related to poor prognosis and overall survival rates in patients diagnosed with laryngeal squamous carcinoma.

Methods: The present study was conducted in the Department of ENT, SKMCH, Muzaffarpur, Bihar, India for the period of 1 year. 100 patients were included in the study.

Results: Age and denial of care were the factors related to patient delay, medical doctors, the first consult decision and the malpractice were statistically related to the professional delay. The mean of patient delay was 62.46 weeks and thought there was a difference between different groups of patient, the latest was not statistically significant. Same goes for the professional delay where the mean delay was 15.70 weeks.

Conclusion: The TNM system is an anatomical means of classification, which takes into account neither the biological aggressiveness of the specific tumor nor the host's immunological response. It was not developed to serve as a specific guideline for the management of a particular patient, nor does the system have the ability to predict the outcome of individual patients. Whereas physicians are focused on the concept of optimal treatment, patients are interested in their prognosis, and one of the most important tasks is to assess our present ability to predict the probable outcome for an individual patient with laryngeal cancer.

Keywords: Laryngeal squamous carcinoma, Delay in laryngeal carcinoma, diagnosis, prognosis

Introduction

Laryngeal squamous cell carcinoma (LSCC) is the second most common primary malignant tumor of the respiratory tract after lung cancer. It is, also the second most common primary epithelial malignant tumor of the head and neck. The age of onset of LSCC is mostly between 50 and 70 years. With a sex ratio of approximately 4:1, most LSCC patients are male.[1] According to estimates by the American Cancer Society approximately 12,370 patients will be diagnosed with LSCC and 3750 of them will die from the disease in 2020.[2] Etiology has confirmed that smoking and drinking are related to the occurrence and development of LSCC,

and the survival rate of smokers and drinkers is lower than that of non-smokers and non-drinkers. [1,3] Due to the increase in tobacco and alcohol consumption and occupational exposure to toxic substances like polycyclic aromatic hydrocarbons (PAH), the prevalence rate of LSCC has increased in recent years. [4,5] The factors affecting the prognosis and survival of patients with LSCC can be classified into host, tumor, and treatment factors. The 5-year survival rate for patients with early LSCC is 70 to 90%; while for patients with advanced LSCC, it is only about 30%. [6]

Some published studies have stated that younger patients have better survival rates and prognosis than older patients6, [7], but other studies observed that younger patients have higher risk of recurrence than older patients. [8] Sex is another factor related to LSCC prognosis, with females appearing to have better prognosis than males. [9] However, this trend may be due to other factors such as the uneven distribution of smoking habits between males and females. Malnutrition has also been identified as an independent prognostic factor of LSCC. [10] Further, general condition of the patients, such as the existence of complications, can affect prognosis and survival. For example, pre-treatment hemoglobin levels were also found to be another factor affecting prognosis. [11,12] In a series of 1030 head and neck cancer patients, Lacy et al found that younger patients had a significantly better five-year survival rate than middle-aged or old patients. [13] Age remained a significant factor even after controlling for smoking, comorbidity, primary site, TNM stage, and nodal disease. Young patients also developed fewer recurrences and second primary tumors. In the population-based study by Misono et al comprising 10 429 patients in the Surveillance, Epidemiology, and End Results (SEER) database, better survival was observed with younger age. [14] Conversely, in a smaller Norwegian series of 1616 laryngeal squamous cell carcinoma (LSCC) patients, an increased risk for a recurrence was observed in patients who were younger than 70 years. [15]

The aim of the study was to analyze the different factors that could impact the patient and the professional delays, and hence analyze factors related to poor prognosis and overall survival rates.

Materials and Methods

The present study was conducted in the Department of ENT, SKMCH, Muzaffarpur, Bihar, India for the period of 1 year. 100 patients were included in the study.

We used a non-probability sampling method: Purposive sampling. The inclusion criteria were mainly based on a histologically confirmation of a primary laryngeal squamous carcinoma, to which no exclusion criteria were needed; we thus collected data from 100 patients.

Patient delay was defined by the time gap between the date of the constatation of the first symptom and the date of the first consult. Professional delay was defined by the time gape between the date of the first consultation and the date of the diagnosis assessment. Total delay was defined by the sum of both patient and professional delay. The delay was presented in weeks.

Charlson comorbidity index was used to categorize the patient status and we defined subgroups as follow: No comorbidity; CI score 0; Modest comorbidity; CI score 1-2; High comorbidity; CI score; 3 or more.

The statistical study was conducted using SPSS, all variable were categorized in groups. We compared the groups using the Kruskal-Wallis tests. The survival functions were determined using Kaplan-Meier method and compared using Breslow's test. The multivariate analysis used cox regression with disease-specific

survival from the survival status at the time the study was conducted.

Results

Table 1: Statistical results comparing different variables with patient delay intervals

Variables	Patient delay	Mean rank	P value
	<26	40.46	
Age (years)	26-54	35.55	0.040
	54-104	44.56	
	≥104	52.78	
	<26	42.88	
Sex	26-54	44.56	0.715
	54-104	45.05	
	≥104	40.40	
	<26	44.76	
Comorbidities	26-54	41.29	0.665
	54-104	43.77	
	≥104	46.74	
	<26	38.42	
Origin	26-54	47.23	0.567
	54-104	43.07	
	≥104	46.24	
	<26	41.07	
Profession	26-54	46.74	0.414
	54-104	42.78	
	≥104	47.53	
	<26	38.22	
	26-54	41.59	
Socioeconomic level	54-104	46.24	0.525
	≥104	48.32	
	<26	41.50	
Academic level	26-54	43.27	0.868
	54-104	44.26	
	≥104	49.51	
	<26	44.06	
Social status	26-54	45.85	0.920
	54-104	44.06	
	≥104	42.00	
	<26	43.27	
Housing situation	26-54	46.00	0.155
	54-104	42.58	
	≥104	46.00	
	<26	39.21	
Distance to the nearest health care facility	26-54	41.79	0.555
	54-104	48.12	
	≥104	46.54	
	<26	42.48	
First symptom	26-54	46.64	0.468
	54-104	45.05	

	≥104	42.58	
	<26	48.22	
Lack of means	26-54	44.36	0.599
	54-104	41.69	
	≥104	43.77	
	<26	39.51	
	26-54	35.65	
Denial of care	54-104	46.54	0.036
	≥104	56.34	
	<26	43.00	
Use of traditional treatment	26-54	38.82	0.645
	54-104	45.05	
	≥104	46.84	

Table 2: Statistical results comparing different variables with professional delay intervals

Variables	Professional delay	Mean rank	P value
	<26	46.54	
Mismanagement	26-54	35.55	0.005
	54-104	42.88	
	≥104	56.34	
Difficulty in diagnosis	<26	38.00	
	26-54	42.78	0.764
	54-104	44.56	
	≥104	45.65	
	<26	39.41	
Medical doctor	26-54	48.52	0.032
	54-104	38.72	
	≥104	51.19	
	<26	35.55	
	26-54	49.81	
First consultation decision	54-104	37.13	0.040
	≥104	53.17	

Age and denial of care were the factors related to patient delay, medical doctors, the first consult decision and the malpractice were statistically related to the professional delay.

Table 3: Patient distribution as per different delays

Delay intervals (weeks)	Patient delay (%)	Professional delay (%)	Total delay (%)
<26	20 (20)	9 (9)	10 (10)
26-54	24 (24)	29 (29)	26 (26)
54-104	40 (40)	44 (44)	40 (40)
≥104	16 (16)	18 (18)	24 (24)

The mean of patient delay was 62.46 weeks and thought there was a difference between different groups of patient, the latest was not statistically significant. Same goes for the professional delay where the mean delay was 15.70 weeks.

Discussion

Laryngeal cancer comes in the second place in all head and neck cancers and the squamous cell carcinoma of head and neck seems to be the seventh most common histological type worldwide. [16,17] Nevertheless, this type of malignant tumors is often diagnosed in its advanced, aggressive stages, which leads to a great morbidity and mortality rates; as the clinical staging is directly related to a poor prognosis. [18-20]

Age and denial of care were the factors related to patient delay, medical doctors, the first consult decision and the malpractice were statistically related to the professional delay. The mean of patient delay was 62.46 weeks and thought there was a difference between different groups of patient, the latest was not statistically significant. Same goes for the professional delay where the mean delay was 15.70 weeks. List et al suggest the use of the Functional Assessment of Cancer Therapy—Head and Neck Scale and the Performance Status for Head and Neck Cancer Patients to describe performance status and quality of life of head and neck cancer patients. [21] The patient's performance status can affect not only prognosis but also the choice of treatment. Patients with decreased functional capacity may be deemed “too sick” for one treatment (eg, surgery) and thus receive an alternative (eg, radiotherapy). [22] Patients with cancer of the larynx often have other diseases and illnesses in addition to their cancer. These other conditions, which are generally referred to as comorbidities [23] have a profound effect on treatment selection and prognosis. [24]

Distant metastases in squamous cell carcinoma are usually preceded by lymph node metastases. Blood-born metastases are uncommon, but widespread dissemination to various viscera may occur in advanced stages of laryngeal cancer. The sites which appear to be most affected by distant metastatic spread are the mediastinal lymph nodes, lungs, liver, pleura, skeletal system, kidney, heart, spleen, and pancreas. [25] The cavernous sinus and temporal bones are an unusual site for metastasis. Naturally, distant metastases have been correlated with a poor prognosis. Poorly differentiated cancers usually have a higher rate of metastatic disease when compared with well-differentiated cancers, but this correlation is not always valid. [26] Also, the degree of differentiation suffers from the subjectivity of interpretation by pathologists. In our case primary care doctors first choice was to treat patient they received for chronic dysphonia as a benign infection or as an acute laryngitis, instead of suspecting malignancy and referring the patient for a laryngoscopy. The first medical consultant and the first medical decision were highly associated with extended professional delays. Daniel and al published on 2009 a paper on medical malpractice and cancer, they stated that 53% of their patients who accused hoarseness were not evaluated implying that when doctors should have performed a biopsy, they didn’t, which led to patients thinking their laryngectomy was a consequence or a complication of the delay. [27]

This makes us think that doctors should be more sensitized about laryngeal cancers and the importance of the early diagnosis to prevent radical treatment that might affect the quality of life of patients, a mirrored laryngoscopy is a simple and unharmful examination that can make the practitioner suspect a laryngeal neoplasm, also referring to a laryngologist when not sure about the outcome of the examination

is better than leaving the patient on medical treatment. [28,29] Seeing the results of all these studies, should make us think about ways, us laryngologists, can diminish the professional delay and raise awareness among younger health care givers on the importance of considering chronic dysphonia as a serious condition that could hide behind it a possible cancer diagnosis; make a full laryngeal examination in patients with risk factors who come into consultation, with or without laryngeal symptoms. And more importantly educate the general population, for them to understand the importance of seeking medical advice when presenting symptoms as hoarseness, dysphonia or even Pharyngalgial as it would reduce the patients and professional delays and thus the overall prognosis. [30-32]

Conclusion

The TNM system is an anatomical means of classification, which takes into account neither the biological aggressiveness of the specific tumor nor the host's immunological response. It was not developed to serve as a specific guideline for the management of a particular patient, nor does the system have the ability to predict the outcome of individual patients. Whereas physicians are focused on the concept of optimal treatment, patients are interested in their prognosis, and one of the most important tasks is to assess our present ability to predict the probable outcome for an individual patient with laryngeal cancer. The development and application of molecular biology tools to analyze biopsy material may be predictive for the biological behavior of laryngeal cancer but cannot be employed routinely at this time, but significant progress is being made and biomarkers may inform both prognosis and optimum treatment in the future.

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