



PATIENT CHARACTERISTICS OF LARYNGEAL CARCINOMA AT RSUP DR. HASAN SADIKIN BANDUNG IN 2017-2022

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ABSTRACT

Introduction: Globally, the incidence and prevalence of laryngeal carcinoma vary significantly, and the disease is more common in men and typically affects those over 65 years old. It is therefore essential to raise awareness of the risk factors and symptoms of this disease, as well as the importance of early detection to improve outcomes for those affected. **Objective:** to understand the characteristics of laryngeal carcinoma patients at Dr. Hasan Sadikin General Hospital in Bandung, Indonesia from 2017 to 2022. **Methods:** This study used a descriptive retrospective method. The data collected was secondary data from medical records of laryngeal carcinoma patients treated at Dr. Hasan Sadikin General Hospital in Bandung during the period of January 1, 2017, to December 31, 2022. **Results:** A total of 438 laryngeal carcinoma patients visited RSUP DR. Hasan Sadikin Bandung from 2017-2022, with the majority being adult males and the most common age group being the elderly (50-64 years old). The most prevalent risk factor was a history of smoking, present in 78.26%. The most frequently reported symptom was hoarseness, found in 56.52%. Almost all anatomopathological results showed squamous cell carcinoma, in 97.83%. **Conclusion:** Laryngeal Carcinoma at Dr. Hasan Sadikin in Bandung for the 2017-2022 is more common in men, age group 50-64 years, with the risk factor of smoking and the most common symptom is hoarseness. The most pathological results is squamous cell carcinoma, most often come at the stage 3, and therapy is carried out according to the examination and the laryngeal carcinoma stage, where the most treatment is a combination of surgery and radiotherapy.

Keywords: laryngeal carcinoma, early detection, prevalence, incidence.

Introduction

Laryngeal carcinoma is a malignant disease that arises from the squamous epithelial tissue of the larynx and is divided into three parts: supraglottis, glottis, and subglottis. It is one of the most common head and neck malignancies.¹ The exact etiology is still unknown, but there are several factors closely related to the occurrence of laryngeal malignancy, including smoking, alcohol, radioactive rays, air pollution, neck radiation, and asbestosis. Squamous cell carcinoma accounts for 95-98% of all malignant tumors in the larynx. The development of squamous cell carcinoma of the larynx originates from potential squamous epithelial cell changes that develop into malignancy. Early symptoms include hoarseness, pain, and dysphagia. If the diagnosis is delayed or the patient does not receive appropriate therapy, it can be life-threatening due to airway obstruction. Patients usually present in advanced stages, resulting in inadequate treatment. Therefore, accurate diagnosis and management are required.^{2,3}

Laryngeal carcinoma can be found in various parts of the world with varying incidence rates. Data on laryngeal cancer epidemiology from the Global Health Data Exchange (GHDx) for the last three decades (1990-2017) showed that 210,606 new cases of laryngeal cancer were diagnosed worldwide in 2017, with a prevalence of 1.09 million cases, 126,471 deaths, and 3.28 million DALYs (0.13% of all DALYs). The incidence and prevalence have increased by 12.0% and 23.8%, respectively, over the past three decades, while deaths have decreased by about 5%. Among all types of cancer, laryngeal malignancy is the 22nd in terms of incidence (0.89% of all cancers), the 18th in terms of prevalence (1.44% of all cancers), the 18th in terms of DALY (1.50% of all cancers), and the 18th in terms of mortality (1.39% of all cancer deaths). According to GBD 2017, 7.3% of laryngeal carcinomas are in the metastasis stage, and

1.0% are in the terminal stage, where 5.1% survive with laryngectomy.

Laryngeal carcinoma is approximately 5 times higher in men and increases with age, peaking after the age of 65. Smoking and alcohol abuse contribute to about 90% of all deaths worldwide from laryngeal cancer. The incidence has gradually decreased in Europe over the past three decades, while it has increased in Southeast Asia and the Western Pacific.^{4,5}

The American Cancer Society estimates that there will be about 12,260 new cases with 3,630 deaths (29.6%). About 60% are located in the glottis and 35% in the supraglottic region.⁶ A study at a tertiary hospital in India in 2014 showed that laryngeal carcinoma was more common in men than in women and was most commonly found in the age group of 51-60 years. Based on the most frequent location classification, it is found in the supraglottic region, where smoking and alcohol consumption remain the main risk factors. Generally, patients first come to the hospital with a primary T1/T2 tumor and N2 lymph node involvement, where level 2 lymph nodes are most commonly found.⁷

Research conducted in Thailand has shown that laryngeal cancer is the third most common cancer found in male head and neck cancers. Most laryngeal carcinoma patients are male, active smokers, alcohol consumers, and have histology showing squamous cell carcinoma. The disease characteristics show that most cases of supraglottic carcinoma are in an advanced local stage (84.4%), while most patients with glottic carcinoma are diagnosed at an early stage (61.3%). Hoarseness is the most common presenting symptom. Regarding therapy response, glottic cancer performs better than supraglottic

cancer. For glottic carcinoma therapy, surgery alone or primary radiation shows good 5-year survival rates with no difference in modality outcomes (87.5% versus 83.2%). In the treatment of supraglottic cancer, postoperative radiation is inversely proportional to glottic cancer surgery, where 5-year overall survival rates are improved compared to primary radiation alone (52.2% versus 39.2%).⁸

According to reports of laryngeal carcinoma patients visiting the THT-KL RSHS Bandung polyclinic during the 2013-2015 period, they rank third in head and neck malignancy with 1439 patients with a male to female ratio of 10:1 and the most common age group being in the 50s, accounting for 30%. Risk factors are mostly caused by smoking (99%), with the main complaints being shortness of breath (54%), and most patients coming in at stage III. Patients received management in the form of surgery and radiotherapy at 44%, and the most common complication is fistula formation at 12%.⁹

The high prevalence of laryngeal carcinoma and the problems in early recognition and diagnosis, such as patients' ignorance of risk factors and early symptoms, leading to delayed treatment, and primary clinical symptoms that mimic benign conditions or confuse examinations, make it difficult for medical staff, especially in primary health care facilities, to diagnose the disease. There are also difficulties in obtaining immediate biopsies from suspected lesions, resulting in many patients presenting at an advanced stage and causing suboptimal treatment outcomes and a high death rate from the disease.^{10,11}

Therefore, updating data each period is needed to determine the development of laryngeal carcinoma at Dr. Hasan Sadikin Hospital Bandung to improve the diagnosis and management of laryngeal carcinoma patients, especially at Dr. Hasan Sadikin Hospital Bandung. This will be discussed in this study regarding the latest data on the characteristics of laryngeal carcinoma patients at Dr. Hasan Sadikin Hospital from 2017-2022

Methods

This study utilized a retrospective descriptive method, gathering secondary data from medical records of patients with laryngeal carcinoma treated at Dr. Hasan Sadikin General Hospital in Bandung from January 1, 2017, to December 31, 2022. Inclusion criteria consisted of cases of laryngeal carcinoma treated at the hospital during the stated period, while exclusion criteria included samples with incomplete, missing, or unclear medical records, as well as samples that did not complete therapy.

The study was conducted at the inpatient medical records department of Dr. Hasan Sadikin Hospital in Bandung, and data processing took place after the data collection process was completed. Descriptive statistical analysis was performed using Microsoft Excel 2013 to suit the research objectives

Results

General Characteristics of Research Subjects

There were 438 laryngeal carcinoma patients who visited RSUP DR. Hasan Sadikin Bandung from 2017 to 2022. Inclusion and exclusion criteria were met by 368 laryngeal carcinoma patients who participated in this study, consisting of 310 males (84,25%) and 58 females (15.75%). Most cases of laryngeal carcinoma occur at the age of 50-64 years (59.78%), followed by over 64 years (22.83%). Regarding the educational background of the patients in this study, 144 (39.13%) had completed high school education, 100 (27.17%) had completed primary education, 100 (27.17%) had completed junior high school education, 52 (14.13%) had obtained a bachelor's degree, and only 36 (9.78%) had no formal education.

Table 1. Characteristics of Laryngeal Carcinoma Patients

Characteristics	N=92	(%)
Gender		
Male	310	84.25
Female	58	15.75
Age		
≤17 years		
18-34 years	12	3.26
35-49 years	52	14.13
50-64 years	220	59.78
≥65 years	84	22.83
Education		
Elementary school (SD)	100	27.17
Junior high school (SMP)	36	9.78
Senior high school (SMA/SMK)	144	39.13
Bachelor's degree (S-1)	52	14.13
No education	36	9.78

The Table 1 presents data indicating that the majority of laryngeal carcinoma patients are adult males, with the highest

frequency observed among the elderly (50-64 years old) and rare occurrences among young adults (<35 years old)

Table 2. the risk factors for laryngeal carcinoma based on gender

Symptoms	Male	Female	Total
Cigarettes	280 (97.22%)	8 (2.06%)	288 (78.26)
Alcohol	52 (100%)	-	52 (14.13)
Family history	8 (66.67%)	4 (33.33%)	12 (3.26)

Description of Laryngeal Carcinoma Risk Factors

The most commonly observed risk factor based on the table is a history of smoking, which is present in 72 patient

(14.13%) and a family history of head and neck cancer is only found in 3 patients (3.26%). Among the 72 laryngeal carcinoma patients who smoked, 97.22% were male. All 13 patients who had a history of alcohol consumption were male. Of the patients with

Stage	Main Complaints					Total
	Hoarseness	Dyspnea	Odynophagia	Dysphagia	Others	
I	n (%) 9 (81.81)	1 (9.09)	1 (9.09)	-	-	11 (2.98)
II	n (%) 24(54.54)	12 (27.27)	-	8 (18.18)	-	44 (11.96)
III	n (%) 123 (63.37)	48 (24.87)	8 (4.14)	4 (2.07)	4 (2.07)	193 (52.44)
IV	n (%) 52 (43.44)	52 (43.33)	-	4 (3.33)	12 (10)	120 (32.61)
Total	n (%) 208 (56.53)	116 (31.52)	12 (3.26)	16 (4.35)	16 (4.35)	368 (100)

(78.26%), while a history of alcohol consumption is only found in 13 patients

a family history of head and neck malignancies, 66.67% were male and 33.33% were female.

Main Complaints Based on Laryngeal Carcinoma Stage

Table 3. Main Complaints Based on Laryngeal Carcinoma Stage

The table 3 above shows that the most common main complaint among laryngeal carcinoma patients is hoarseness, with 208 patients (56.53%) reporting this symptom, followed by dyspnea or shortness of breath or dyspnea, with 116 patients (31.52%). Only a small number of patients reported other complaints, such as dysphagia, odynophagia, or a lump in the neck. From the table, it can be seen that on average, laryngeal carcinoma patients are diagnosed at advanced stages, with 193 patients (53.44%) at Stage III and 120 patients (32.61%) at

Stage IV. Only 11 patient (2.98) and 44 patients (11.96%) are diagnosed at early stages, specifically Stage I or II. In patients with early-stage laryngeal carcinoma, the most common main complaint is hoarseness, with 81% of Stage I patients and 54% of Stage II patients reporting this symptom. In contrast, the most common complaints among patients with advanced stages are hoarseness (63% for Stage III and 43% for Stage IV) and dyspnea (24% for Stage III and 43% for Stage IV

Table 4. Main Complaints According to the Location of Laryngeal Carcinoma

Main Complaint	Location				Total
	Glottis	Subglottis	Supraglottis	Transglottis	
Hoarseness	n (%) 52 (25)	16 (7.69)	36 (17.3)	104 (50)	208 (56.53)
Dyspnea	n (%) 20 (17.24)	16 (13.79)	12 (10.83)	68 (70.34)	116 (31.52)
Odynophagia	n (%) -	-	8 (66.67)	4 (33.33)	12 (3.26)
Dysphagia	n (%) -	-	12 (75)	4 (25)	16 (4.35)
Other	n (%) -	-	12 (75)	4 (25)	16 (4.35)

Total	N (%)	72 (19.57)	32 (8.7)	80 (21.74)	184 (50)	368 (100)
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Description of Main Complaints According to the Location of Laryngeal Carcinoma

The table 4 above displays that the tumor location most commonly found in this study is in the transglottic area with 184 people (50%), followed by supraglottic with 80 people (21.74%), glottic with 72 people (19.57%), and least commonly found in subglottic with

32 people (8.7%). In this study, the main complaint of hoarseness was found most frequently in patients with transglottic (50%) and glottic (25%) laryngeal carcinoma. The main complaint of shortness of breath was mostly found in transglottic laryngeal carcinoma (70.34%). The main complaints of odynophagia, dysphagia, and other complaints were more commonly found in supraglottic laryngeal carcinoma

Description of Histopathology Laryngeal Carcinoma

The results of this study showed that almost all of the anatomical pathology results were characterized by squamous cell carcinoma, which was found in 90 patients (97.83%). One patient with laryngeal carcinoma had anatomical

pathology results showing Epidermoid Carcinoma and another patient had Basaloid Carcinoma. The anatomical pathology results were obtained through microlaryngeal biopsy approach.

Table 5. Histopathology of Laryngeal Carcinoma

Histopathology	N=368	(%)
<i>Squamous Cell Carcinoma</i>	360	97.83
<i>Epidermoid Carcinoma</i>	4	1.09
<i>Basaloid Carcinoma</i>	4	1.09

Description of Laryngeal Carcinoma Therapy

The therapy for laryngeal carcinoma in this study is mainly a combination of surgery and radiotherapy, which was used by 245 patients (66.57%). The most commonly performed surgery was total laryngectomy, with or without neck dissection. Other therapies used in this study were primary radiotherapy and a combination of surgery, radiotherapy, and chemotherapy, each used by 47 patients (12.77%). Primary radiotherapy was frequently used for Stage I, accounting for 90% of cases, while primary

chemotherapy was more commonly used for Stage IV, accounting for 75% of cases. Whole chemoradiation therapy was used only for Stage IV. The most common therapy for Stage III was a combination of surgery and radiation, which was used in 59.6% of cases, while the most commonly used therapy for early stage are radiation, 22% for stage 1 and 47.5% for stage 2. (Tabel 6)

Tabel 6. Laryngeal Carcinoma Therapy

Therapy	n (%)	Stage				Total
		I	II	III	IV	
Radiation therapy	9 (22.5)	19 (47.5)	12 (30)	-	40 (10.87)	
Chemotherapy	-	-	4 (25)	12 (75)	16 (4.35)	
Surgery + Radiation therapy	2 (0.81)	25 (10.2)	146 (59.6)	72 (29.38)	245(66.57)	
Chemoradiation	-	-	-	20 (100)	20 (5.43)	
Surgery + Radiation therapy + Chemotherapy	-	-	31 (65.95)	16 (34.04)	47 (12.77)	
Total	N (%)	11 (2.98)	44 (11.96)	193 (52.44)	120 (32.61)	368 (100)

Discussion

The study involved 368 patients with laryngeal carcinoma, consisting of men 84.25% and women 15.75%. Most of the male adult patients with laryngeal carcinoma were in the elderly group (50-64 years old), with the highest level of education being high school with 144 people (39.13%) and elementary school with 100 people (27.17%). These results are consistent with similar studies by Singh J, et al. in India, and Dechaphunkul T, et al. in Thailand, which reported that the incidence of laryngeal carcinoma is higher in men than in women. The results are also consistent with the report of patients with laryngeal carcinoma visiting the ENT clinic of RSHS Bandung in the 2013-2015 period, where the male-to-female ratio was 10:1, and the highest age group was 50 years. This may be due to risk factors that can affect the incidence of laryngeal carcinoma, such as smoking, which is more common in men than in women. The incidence of laryngeal carcinoma increases with age, which may be related to the duration of exposure to carcinogens and a decline in the immune system.^{7,9,14}

The main complaint most commonly found in this study is hoarseness, with 208 people (56.53%), which is in line with Dechaphunkul T, et al.'s study in Thailand, stating that hoarseness is the most common presenting symptom. Hoarseness is the main symptom of laryngeal carcinoma because there is a disruption of laryngeal phonation function. In laryngeal carcinoma, the vocal cords fail to function properly due to irregular vocal cords, occlusion or narrowing of the glottic cleft, involvement of the vocalis muscles, joints, and cricoarytenoid ligaments, and sometimes attacking the nerves. The presence of a tumor in the vocal cords will interfere with the movement and vibration of both vocal cords. The most common other main complaint is dyspnea 56.53% and shortness of breath 31.52%. This is in line with the study of laryngeal carcinoma patients visiting the ENT clinic of RSHS Bandung in the 2013-2015 period, which states that the most common complaint of patients with laryngeal carcinoma who came to RSHS at that time was shortness of breath, accounting for 54%. This symptom is caused by a blockage of the airway by a tumor mass, accumulation of dirt or secretions, or by vocal cord fixation. Both of these symptoms are often found in supraglottic or transglottic tumors.^{8,9}

The most commonly found risk factor is a history of smoking, found in 78.26%. This result is consistent with the epidemiological data on laryngeal cancer for the last three decades (1990-2017) taken from the Global Health Data Exchange (GHDx), which states that smoking contributes to 90% of laryngeal carcinoma cases worldwide. The laryngeal carcinoma data at the ENT clinic of RSHS Bandung in 2013-2015 also states that the risk factor is mostly caused by smoking, accounting for 99%. A history of alcohol consumption was only found in 14.13%, and a history of head and neck cancer in the family was only found in 3.26%. These results contradict Singh J, et al.'s study in India, where alcohol is a major risk factor along with smoking. Smoking is one of the main risk factors because there are many carcinogenic substances. This may be due to a lack of recorded data on alcohol consumption in medical records.^{4,9}

In this study, the location of the tumor was most commonly found in the transglottic region 50%, followed by supraglottic 21.74%, glottic 19.57%, and least commonly found in subglottic 8.7%. According to The American Cancer Society, 60% of tumors are located in the glottis, and 35% are located in the supraglottic region. The average patient presented at an advanced stage, specifically Stage III, in 40 cases (43.48%), and almost all anatomical pathology results showed squamous cell carcinoma 97.83%. These findings are consistent with the data on laryngeal carcinoma at the ENT department of RS Hasan Sadikin Hospital in Bandung from 2013 to 2015, where most patients presented at Stage III. Many patients presented at an advanced stage possibly due to lower education levels and a lack of healthcare facilities in the area.^{6,9}

The most common treatment for laryngeal carcinoma in this study was a combination of surgery and radiotherapy 66.57%. This is consistent with the data on laryngeal carcinoma at the ENT department of RS Hasan Sadikin Hospital in Bandung from 2013 to 2015, where the most common management was surgery and radiotherapy (44%), and the most common complication was the formation of a fistula (12%). This may be related to the fact that patients who present at an advanced stage are treated with a combination of modalities, whereas patients with early-stage disease are treated with a single modality. As a guideline, Stage I is treated with radiation therapy, Stage II and III are treated with surgery, and Stage IV is treated with surgery and reconstruction if possible or referred for radiation therapy. Primary radiation in this study was mostly used for early-stage and advanced-stage patients who refused surgery. Primary chemotherapy in this study was mostly used in nonoperable advanced stage cases.^{9,19,21}

Despite the valuable insights that this study provides, there are certain limitations that must be acknowledged. One of the main limitations is the lack of data on alcohol consumption and family medical history as risk factors. While the study provides significant information on the characteristics of patients with laryngeal carcinoma, the absence of data on these two important risk factors may limit the generalizability of the findings to other populations. Moreover, although smoking and alcohol consumption were identified as important risk factors in this study, the data provided did not include information on the duration and quantity consumed daily. As a result, it may be challenging to make accurate inferences regarding the relationship between these factors and the incidence of laryngeal carcinoma. Another limitation of the study is the lack of data on treatment response. While the study provides valuable information on the most common treatments administered to patients with laryngeal carcinoma, there is no information on the response to treatment. Without this information, it is difficult to assess the efficacy of the treatments and identify opportunities for improving treatment outcomes. Despite these limitations, this study contributes significantly to the body of knowledge on laryngeal carcinoma and provides important insights that can inform future research and clinical practice. However, it is essential to address the limitations identified in this study in

future research to further improve our understanding of the factors that contribute to the incidence and

Conclusion

Laryngeal Carcinoma at Dr. Hasan Sadikin in Bandung for the 2017-2022 is more common in men, age group 50-64 years, with the risk factor of smoking and the most common symptom is hoarseness. The most pathological results

treatment of laryngeal carcinoma.

is squamous cell carcinoma, most often come at the stage 3, and therapy is carried out according to the examination and the laryngeal carcinoma stage, where the most treatment is a combination of surgery and radiotherapy

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