

Characteristics of Laryngeal Carcinoma Patients Who Underwent Surgery in Bali, Indonesia

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ABSTRACT

Laryngeal carcinoma is a frequent malignancy in the world. However, limited data are found in Indonesia, including in Bali which is one of the famous tourism places in the world. The purpose of this study was to determine the characteristics of patients with laryngeal carcinoma who underwent surgery at Sanglah General Hospital Denpasar Bali for the period 2015 – 2019. The retrospective study was conducted in this study. The present study found 66 cases of patient with laryngeal carcinoma. The result found several specific characteristics such as 10,6% of patients were come from outside Bali and the complication occurs in 20% of cases.

Keywords: Laryngeal carcinoma, Bali, surgery.

1. INTRODUCTION

Carcinoma of the ear, nose, throat, head and neck (ENT-HNS) is included in the top five of all malignancies in the world [1]. Laryngeal carcinoma is a type of malignancy in the ENT-HNS field which is an abnormal mass in the tissues and structures of the larynx with an overgrowth and uncoordinated such as normal tissue growth [2]. The main causes of laryngeal carcinoma are not fully known, but are thought to be associated with chronic inflammation, smoking habits, excessive alcohol consumption, infection with Human Papilloma virus, exposure to radiation and exposure to carcinogens [3,4]. Risk of laryngeal carcinoma will increase with the number of risk factors present in a person [5,6].

Epidemiological data show the incidence of laryngeal carcinoma is 1% of all types of cancer in the United States and 0.75% of all cases of death caused by all types of cancer [7]. According to Globocan in 2012, the incidence of laryngeal carcinoma worldwide reached 156,877 cases or about 1-2% of all malignancies in the world. The incidence of laryngeal carcinoma in the same year in Asia reached 77,505 cases, and there were 2,657 cases in Indonesia. In a study conducted at dr. Hasan Sadikin Bandung, found

100 laryngeal carcinoma patients out of 1,439 head-neck malignancies from 2013 to 2015 [2,8]. Study in West Nusa Tenggara reported 19 patients during 2018-2019 [9].

More than 90% of patients with laryngeal carcinoma have a histopathological picture of squamous cell carcinoma [9]. Laryngeal carcinoma can occur in the glottis, supraglottis and subglottis. Treatment modalities for laryngeal carcinoma can be surgery, radiation therapy, or chemotherapy. Management principles given to laryngeal carcinoma patients need to consider the patient's age, general condition, patient's personal decisions, institutional facilities that carry out therapy, location and stage of the tumor. Thus, laryngeal carcinoma should involve the multidisciplinary assessment. The prognosis for laryngeal carcinoma differs depending on the stage of the disease, the location of the tumor, the treatment options and the skill of the specialist. The prognosis becomes worse if there are complications that often reflect the consequences of the therapeutic modality used.

Based on this background, the researchers are interested to conducting research on the characteristics of laryngeal carcinoma patients who undergo surgery

in Bali, one of the most popular tourism places in Indonesia. The purpose of this study was to determine the characteristics of patients with laryngeal carcinoma who underwent surgery at Sanglah General Hospital Denpasar Bali for the period 2015 – 2019 based on gender, age, histopathological examination, clinical stage, location of cancer, socioeconomic and demographic factors, history of radiotherapy and chemotherapy treatment, type of surgery, length of post operative hospitalization and complications.

2. METHOD

This study used a retrospective descriptive research design by mining the secondary data from medical records of patients with laryngeal carcinoma. The research sample was laryngeal carcinoma patients who underwent surgery at Sanglah General Hospital for the period 2015-2019. The inclusion criteria of this study were all laryngeal carcinoma patients who had complete data on medical records. Sampling was done by total sampling.

Stage of cases were based on AJCC 2018. Socio-economic conditions were defined as the type of class in which the subject was hospitalized, for instance, if the subject lives in class 3 categorized as poor; if the subject was in grade 2 then categorized as fair; and if the subject was in class 1 or VIP then categorized as good.

Before collecting data, ethical clearance approval was granted by ethics committee of Faculty of Medicine, University of Udayana. The results of the examination were recorded in the data collection sheet for further analysis. The results then analyzed and presented descriptively in tabular and narrative form. Data analysis in this study consisted of descriptive statistical analysis using SPSS 21 for windows. Variables with a numeric data scale (ratio) were displayed using means and standard deviation. Variables that scale categorical data were displayed using relative frequencies (amount and percent).

3. RESULT AND DISCUSSION

3.1. Result

There are 66 cases included in this study. Most of patients with laryngeal carcinoma who underwent surgery is male (Table 1).

Based on age (Table 1), from 66 patients with laryngeal carcinoma who underwent surgery mainly in age 45-54 years old (27 cases or 40.9 %) followed by aged 55 – 64 years (12 cases or 18.2%). The mean age of laryngeal carcinoma patients in this study was 60.08 years \pm 10.91 SD.

Based on the results of histopathologic examination, 65 cases (98.5%) expressed Squamous cell carcinoma (SCC). The main type of histopathologic examination variants is Moderately Differentiated SCC as many as 57 people (86.5%). In addition, there was 1 case (1.5%) who showed Sarcomatoid Squamous Carcinoma results.

Referred to the clinical stage, the most cases stage IV with 43 (65.2%) followed by stage III and II. None of the case on the stage I. According to the tumor site, from 66 patients with laryngeal carcinoma who underwent surgery, glottic tumor is the majority of the cases (62.1%). The rarest site is in subglottic (4.6%).

Based on socioeconomic state (Table 2), from 66 patients with laryngeal carcinoma who underwent surgery, on socioeconomic conditions 45 (68.2%) were poor, 9 (13.6%) were fair and 12 (18.2%) were good.

Based on demographic, from 66 patients with laryngeal carcinoma who underwent surgery, 7 people (10.6%) were came from outside Bali and 59 people (89.5%) were came from Bali. Patients who came from Bali, classified by province of residence, 15 people (22.5%) lived in Denpasar, 8 people (12.15) lived in Badung, 9 people (13.5%) each live in Buleleng and Gianyar, 6 people (10.3) live in Tabanan and 3 people (4.4%) each live in Bangli, Karangasem and Jembrana.

Table 1 Characteristics of patients based on gender

Characteristics	N	%
Gender		
Male	61	92,4
Female	5	7,6
Age (years old)		
< 35	0	0
35 – 44	6	9,1
45 – 54	14	21,2

Characteristics	N	%
55 – 64	27	40,9
65 – 74	12	18,2
75 – 84	6	9,1
>85	1	1,5
Histopathology examination		
Squamous Cell Carcinoma (SCC)		
Poorly Differentiated SCC	2	3
Moderately Differentiated SCC	57	86,5
Well Differentiated SCC	2	3
Papillary SCC	3	4,5
Basaloid SCC	1	1,5
Sarcomatoid Squamous Carcinoma	1	1,5
Clinical Stages		
I	0	0
II	7	10,6
III	16	24,2
IV	43	65,2
Tumor site		
Supraglottic	22	33,3
Glottic	41	62,1
Subglottic	3	4,6
Total	66	100

A total laryngectomy with neck dissection is predominant in the present study although the different is not significant (Table 3). According to additional treatment given on laryngeal carcinoma patient, chemotherapy adjuvant is most recorded. On the other hand, most of the cases are underwent radiotherapy after surgery (Table 3). Based on the

length of stay in the hospital, mostly patient took care less than 15 days (67,7%). The mean length of stay in hospital is 14.47 days \pm 3.966 SD. Postoperative complications occur in 21,2% of cases. The most type of complication appears is stoma stenosis, followed by esofagocutaneous fistula and secondary infection of the stoma.

Table 2 Characteristics of the subject according to socioeconomic and demographic status

Characteristics	N	%
Socioeconomic		
Poor	45	68,2
Fair	9	13,6
Good	12	18,2
Demographic		
Outside Bali	7	10,6
Inside Bali	59	89,4
Denpasar	15	22,5
Badung	8	12,1
Buleleng	9	13,5
Gianyar	9	13,5
Tabanan	6	10,5
Klungkung	4	5,8
Bangli	3	4,4
Karangasem	3	4,4
Jembrana	3	4,4

3.2. Discussion

In this study, the number of patients with laryngeal carcinoma who underwent surgery was more dominant in men than women, 61 men (92.4%) and 5 women (7.6%) with a ratio of 12: 1. This result was similar to previous study who revealed 133 laryngeal carcinoma patients who underwent laryngectomy, 96.2% were male and only 3.8% female [10]. The other study found that out of 754 patients who

underwent laryngectomy 79.3% were male and 20.7% female [11]. The possibility of the risk factors on this characteristics may due to smoking habits in men [9].

The average age of subjects in this study was 60.08 years with the most age group (40.9%) occurring in the 55-64 years age group. This result was comparable with previous study who found the average age of patients undergoing laryngectomy was 61.9 years with an age range between 29 - 89 years [10]. Other study found the average age was 63 years with an age range of 20-88 years [11].

Based on data from the American Cancer Society [7], more than half cases of laryngeal carcinoma occurring at the age of 65 years. The degenerative process and accumulation of various risk factors make the likelihood of laryngeal carcinoma increase with age. However, nowadays the incidence of laryngeal carcinoma at a young age tends to increase. This is related to lifestyle and various other risk factors that are increasingly found at a young age [10,11].

Based on histopathological description, most of the cases (98.5%) showed histopathologic features in the form of squamous cell carcinoma, especially moderated differentiated type. The present result was consistent with research by Papadas et al. [10] where most of patients (58.6%) showed histopathologic

results in the form of moderately differentiated, followed by poor differentiated, and well differentiated sequentially 23.3% and 17.3%.

In this study, 65.2% of patients with laryngeal carcinoma who underwent surgery were stage IV, followed by stage III and stage II consecutively 24.2% and 10.6%. The previous study found a similar pattern [10]. In a study conducted at Hasan Sadikin hospital, Indonesia found that patients came with stage II as much as 34%, stage III as much as 37%, and stage IV as much as 29% [8]. There were several factors may relate to this finding such as patient's knowledge and awareness. However, an advances study should be done to address this relation.

Table 3 Characteristics of treatment and complication

Characteristics	N	%
Type of surgery		
Total laryngectomy	2	40,
	7	9
Total laryngectomy with neck dissection	3	59,
	9	1
Additional treatment		
Chemotherapy		
Chemotherapy neoadjuvant	1	15,
	0	1
On Chemotherapy	1	16,
	1	7
Chemotherapy adjuvant	4	68,
	5	2
Radiotherapy		
Pre-operative	4	6,1
Post-operative	6	93,
	2	9
Length of hospitalization		
1 – 14	4	69,
	6	7
15 – 21	1	18,
	2	2
22 – 28	8	12,
		1
Post operative complication		
No complication	5	78,
	2	8
Stoma stenosis	6	9,1
Esophagocutaneous fistula	5	7,6
Secondary infection of the stoma.	3	4,5

Bali was known as the famous tourism destination in the world. In addition, Bali has known as one of medical tourism destination in Indoneisa. Bali has an excellent connection with the other province in Indonesia. This may initiate the patient from outside Bali to come to seeking the medical treatment for their diseases, including patient with laryngeal carcinoma. There were 10,6% patients came from ouside Bali in this study and the rest were the Balinese resident.

Based on a history of chemotherapy during surgery, 68.2% of laryngeal carcinoma patients

According to the data obtained from previous studies, the most common location of malignant tumors in the larynx is in the glottis [8]. In the study conducted by Aslam et al. [12], it was found that 56% of patients had glottic tumors, 36% had supraglottic and 8% had transglottic tumor. In the study conducted by Papadas et al. [10], 68.4% of the tumor masses were in the glottic and 31.6% of the tumor masses were in the supraglottic. The results of current study were similar to those result. The tumor mass in the glottic tends to produce a symptom such as hoarseness [9]. As a result, the patient will seeking out the treatment earlier. On the other hand, the supraglottic and subglottic tend to cause complaints after being at an advanced stage.

underwent adjuvant chemotherapy. In a study conducted by Papadas et al. [10], from 133 patients, 7 patients underwent adjuvant chemotherapy and 1 underwent neoadjuvant chemotherapy. Adjuvant chemotherapy is chemotherapy given after surgery, either alone or in combination with radiation, and aims to destroy cells that have metastasized. Meanwhile, neoadjuvant chemotherapy is chemotherapy given before surgery to shrink the tumor mass, usually combined with radiotherapy. In addition, in this study, 93.9% of patients with laryngeal carcinoma underwent post-operative radiotherapy. This result was comparable with the previous study [10].

In this study, 59.1% of patients underwent total laryngectomy with neck dissection and 40.9% of the larynx underwent total laryngectomy alone. Xiao et al. [11], states that 69% of patients underwent total laryngectomy with neck dissection and 31% of patients who did not undergo neck dissection. In contrast to the study conducted by Allegra et al. [13], stated that 39.4% of patients underwent total laryngectomy with neck dissection and 60.6% did not undergo neck dissection. National Comprehensive Cancer Network guidelines recommended that neck dissection therapy for palpable neck abnormalities or radiological evidence suggesting neck metastases in primary or recurrent laryngeal carcinoma. In practice, the decision to perform a neck dissection or not is quite complex. Evidence supports neck dissection to accompany primary laryngeal cancer surgery depending on the risk of neck metastases with the risk of complications. Xiao's study demonstrated that concurrent neck dissection did not increase postoperative morbidity or mortality. The 30-day postoperative complication rates, reoperation, readmission, and death were not significantly different between cases with or without neck dissection [11]. Due to the neck dissection was a fundamental tool in

the management of head and neck cancer, research should be continued to explore its risks, with particular emphasis on its application in laryngectomy.

The average length of stay in the hospital for laryngeal carcinoma patients who underwent surgery in this study was 14.47 days \pm 3,966 SD with a range between 12-25 days. Our result was slightly longer compared to previous result [11,13]. This result may be due to the most of our subjects were in advance stage and treatment given mainly laryngectomy with neck dissection or the presence of complication.

The post operative complication was relatively common include bleeding, bruising, airway obstruction, infection of the surgical wound, and pharyngocutaneous fistula. The complications found in this study were comparable with other report. In a study conducted by Maharjan [13], stated that out of 54 patients who underwent total laryngectomy, there were 20 patients who experienced postoperative complications. The most frequent complication was pharyngocutaneous fistulas (30%), followed by infection in surgical wounds (20%), and necrosis on superficial flaps (15%). In the study conducted by Cahyadi [8], 6% of patients suffered from stomal stenosis and 12% had fistulas.[8] In the study conducted by Goepfert et al. [14], of 245 patients, complications occurred in 83 patients (33.9%). The most complication occurs was a pharyngocutaneous fistula (13.9%).

4. CONCLUSION

The presence study found 66 cases of patients with laryngeal carcinoma underwent surgery. Male patient was dominant with the average age is 60.08. Some of the patient came from outside Bali. In this study most of the patient were performed total laryngectomy with neck dissection and post operative complication was 20%.

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