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ARTICLE

Association of Smoking Habit With Nasopharyngeal Carcinoma Stage in ENT-HN Polyclinic RSUP DR. Mohammad Hoesin Palembang

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Abstrak

Karsinoma nasofaring (KNF) adalah tumor ganas yang berada dibagian mukosa rongga nasofaring yang disebabkan oleh banyak faktor, salah satu faktornya adalah merokok. Kebiasaan merokok meningkatkan kepekaan terhadap terjadinya KNF. Merokok menyebabkan terjadinya mutasi gen p53, gen p53 memegang peranan terhadap kerusakan DNA sel dengan jalan menghambat progresi sel. Hilangnya fungsi gen p53 menyebabkan hilangnya kontrol pada siklus sel, sehingga terjadi proliferasi sel-sel sehingga besar peluangnya untuk menjadi sel kanker. Penelitian ini bertujuan untuk menganalisis hubungan kebiasaan merokok dengan stadium karsinoma nasofaring. Penelitian ini adalah studi observasional analitik dengan rancangan cross sectional. Sampel adalah pasien poliklinik THT-KL dan rekam medik pasien karsinoma nasofaring di RSUP Dr. Mohammad Hoesin Palembang bulan Januari 2017-Desember 2018. Sampel penelitian ini berjumlah 70 kasus. Hasil penelitian ini akan disajikan dalam bentuk tabel dan narasi. Dari 70 kasus pasien KNF didapatkan semua penderita adalah laki-laki (100%), kelompok usia ≥ 50 tahun (52,9%), pekerjaan non PNS (90%), alamat diluar Palembang (82,9%), keluhan utama benjolan pada leher (42,9%) dan stadium 4 (81,4%). Hasil uji Fisher's Exact Test tidak terdapat hubungan yang bermakna antara jenis rokok dengan stadium KNF dinyatakan oleh p value=0,067, terdapat hubungan yang bermakna antara jumlah konsumsi rokok dengan stadium KNF dinyatakan oleh p value=0,042 dan tidak terdapat hubungan yang bermakna antara usia mulai merokok dengan stadium KNF dinyatakan oleh p value=1,000. Hasil uji korelasi pada pasien KNF menunjukkan bahwa jumlah rokok ($p=0,043$) merupakan faktor determinan terjadinya stadium KNF dan jenis rokok ($p=0,198$) bukan merupakan faktor determinan terjadinya stadium KNF. Terdapat hubungan yang bermakna antara kebiasaan merokok dengan stadium KNF.

Kata kunci: KNF, Stadium KNF, Kebiasaan Merokok.

Abstract

Association of Smoking Habit With Nasopharyngeal Carcinoma Stage in ENT-HN Polyclinic RSUP DR. Mohammad Hoesin Palembang. Nasopharyngeal Carcinoma (KNF) is malignant tumor that exist in nasopharyngeal cavity which caused by many factors, such as smoking behaviour. Smoking behaviour increase the risk of KNF. Smoking cause the mutation of gen p53 which holding the role of DNA damage by inhibiting cell progression. Gen p53 function loss result in lost control of cell cycle, so that proliferation of cell happen and increasing the risk of becoming cancer cell. This study intends to analyze the relationship between smoking behaviour and nasopharyngeal cancer stadium. This research is an analytic observational study with cross sectional design. The sample is patient of poliklinik THT-KL and medical record of KNF patients in RSUP Dr. Mohammad Hoesin Palembang on January 2017 until December 2018. The amount of sample during this research is 70 cases. The result of this research will be presented in form of table and naration. From 70 KNF cases, it is obtained that all of the patient is male (100%), age group ≥ 50 years (52.9%), occupation is non civil servant (90%), addressed outside of Palembang (82.9%), with main complaint is lump at neck (42.9%) and stadium 4 (81.4%). Fisher's Exact Test results is there is no a significant relationship between the type of cigarette with KNF stadium (p value = 0.067), significant relationship between consumption amount of cigarette with KNF stadium (p value=0.042), and there is no significant relationship between the starting age of smoking with KNF stadium (p value=1.000). The correlation test result showed that the amount of cigarette ($p=0.043$) is a determinant factor of KNF stadium and cigarette type ($p=0.198$) is not a determinant factor of KNF stadium. There is a significant relationship between smoking behaviour and KNF stadium.

Keyword: KNF, Stadium KNF, Kebiasaan Merokok.

1. Introduction

Nasopharyngeal carcinoma (NPC) is a malignant epithelial tumor that arises from the mucosa of the nasopharyngeal cavity¹. Malignant tumors or cancer is an unpredictable disease that attacks regardless of whether a person is rich or poor, fat or thin, elderly or middle age².

Nasopharyngeal carcinoma commonly occurs in Southeast Asian countries. The five countries with the highest incidence of nasopharyngeal cancer in the world are China, Indonesia, Vietnam, India and Malaysia. The stage of nasopharyngeal cancer in the world is 1.2 per 100,000 (in men 1.7 per 100,000; in women, 0.7 per 100,000). The five countries with the highest number of deaths were China, Indonesia, Vietnam, India and Malaysia, respectively. The standard mortality rate for nasopharyngeal cancer in the world is 0.7 per 100,000 (in male 1.0 per 100,000; in female 0.4 per 100,000) which is strongly influenced by several factors³.

According to Ma and Cao (2010), environmental factors that influence the occurrence of NPC are Epstein-Barr virus infection, salted fish, salted food, smoking, drinking alcoholic beverages, the effect of hereditary vulnerability, consuming traditional Chinese medicine, consuming foods containing formaldehyde and chronic upper respiratory disease⁴.

Smoking is a habit without positive goal for health, in essence it is a process of mass burning of tobacco which causes concentrated matter and concentrated air pollution which is consciously inhaled directly and absorbed by the body while breathing air⁵.

Research conducted by the Institute for Addressing Smoking Problems (LM3) in 14 provinces in Indonesia revealed 59.04% of men smokers aged 10 years and over, while in women only 4.83%. Meanwhile, the Household Health Survey (SKRT) data of the Indonesian Ministry of Health in 2001, showed overall (male and female) 31.5% of Indonesia's population smoked⁶. In Indonesia the most

consumed types of cigarettes are clove cigarettes (81.34%), which are cigarettes containing a mixture of tobacco and cloves⁷. According to Hsu WL et al. (2009), smoking is associated with a significant increased risk for nasopharyngeal carcinoma, the longer and more severe smoking habits, the higher the risk of nasopharyngeal carcinoma, long-term heavy smokers is the risk of nasopharyngeal carcinoma, active smokers with more than 30 packs of cigarettes a year can increase the stage of nasopharyngeal carcinoma compared to active smokers who spend less than 30 packs in a year⁸.

So far, there are not so many studies related to the relationship between smoking habits and the stage of nasopharyngeal carcinoma in RSUP DR. Mohammad Hoesin Palembang. Therefore, it is necessary to conduct research on the relationship between smoking habits and the stage of nasopharyngeal carcinoma in RSUP DR. Mohammad Hoesin Palembang.

2. Method

This research is an observational analytic study with a cross-sectional design carried out from August to December 2018. The type of data used are primary data and secondary data in the form of data on smoking habits including types of cigarettes, number of cigarettes consumed, and age of starting smoking and sociodemographic data obtained through direct interviews and medical records of NPC patients in the ENT-HN Dr. Mohammad Hoesin Palembang in January 2017 to December 2018 was taken using consecutive sampling technique. In this study 70 samples were obtained that met the criteria for participation. The inclusion criteria in this study were active nasopharyngeal carcinoma patients who had been treated at the ENT-HN clinic Dr. Mohammad Hoesin Palembang in January 2017-December 2018 and was willing to be interviewed. The exclusion criteria in this study were NPC patients who came with poor

general conditions, patients who did not erect their stage, patients did not sign informed consent and non communicative patients.

Data is processed using SPSS version 24.0. Univariate analysis was used to show the distribution of sociodemographic characteristics of NPC patients in the ENT-HN Polyclinic of Dr. RSUP Mohammad Hoesin Palembang. Patient characteristics are presented in numerical data descriptions. Bivariate analysis was used to determine the meaningful relationship between the two variables studied. Bivariate analysis using Chi-square test, then continued with multivariate analysis with logistic regression.

3. Results

The total number of NPC patients was 70 patients, then the selection was done which fulfilled the inclusion criteria and did not meet the study exclusion criteria.

In table 1, sociodemographic data and smoking habits are presented. In this study it was known that the frequency distribution based on sex that all NPC patients obtained were male. The most age group was more than the same as 50 years as many as 37 patients. The highest number of work was non-civil worker, 63 patients. The biggest address is outside the city of Palembang as many as 58 patients. Lumps in the neck are the most common complaints of NPC patients as many as 30 patients. Meanwhile, the stage of NPC is more commonly found in stage 4. Smoking habits consist of the type of cigarette, the number of cigarettes and the age of starting to smoke. The most consumed type of cigarette is clove cigarettes. There are as many as 53 NPC patients who are heavy smokers. Meanwhile, NPC patients who start smoking the most is more than 10 years of age.

Table 1. Sociodemography analysis (N=70)

Variable	N	%
Sex		
Male	70	100
Female	0	0
Age Group		

<20	0	0
20-29	3	4,3
30-39	6	8,6
40-49	24	34,3
≥50	37	52,9
Job		
Civil Worker	7	10
Non Civil Worker	63	90
Adress		
Palembang	12	17,1
Outside Palembang	58	82,9
Main Complaint		
Mild Epistaxis	18	25,7
Ear Problem	6	8,6
Eye and Neuro Problem	16	22,9
Neck Lumps	30	42,9
NPC Stage		
Stage 1	0	0
Stage 2	4	5,7
Stage 3	9	12,9
Stage 4	57	81,4
Cigarette Type		
Filtered	20	28,6
Cloves	50	71,4
Cigarette Amount		
Mild-moderate Smokers	17	24,3
Heavy Smokers	53	75,7
Starting Age		
>10 years	61	87,1
≤10 years	9	12,9

Table 2 shows that from 50 NPC patients who consumed clove cigarettes there were 49 patients diagnosed with stage 3 and 4, 1 patient diagnosed with stage 1 and 2. In 20 NPC patients who consumed white cigarettes there were 17 patients diagnosed with stage 3 and 4, 3 patients who were diagnosed with stage 1 and 2. There was no significant relationship between the type of cigarette and stage KNF stated by p value = 0.067. Table 2 shows that of 53 NPC patients with heavy smoking there were 52 patients diagnosed with stage 3 and 4, 1 patient diagnosed with stage 1 and 2. In 17 patients with mild-moderate NPC there were 14 patients diagnosed with stage 3 and 4, 3 patients diagnosed stage 1 and 2. There is a significant relationship between the amount of cigarette consumption and the stage of KNF expressed by p value = 0.042. Table 2 shows that of 9 NPC patients who started smoking ≤ 10 years there were 9 patients diagnosed with stage 3 and 4, no patients were

diagnosed with stage 1 and 2. In 61 NPC patients who started smoking > 10 years there were 57 patients diagnosed stage 3 and 4, 4 patients diagnosed with stage 1 and 2. There

was a nonsignificant relationship between the age of starting smoking and stage NPC expressed by p value = 1,000.

Table 2. Association Between Cigarette Type, Amount, and Starting Age with NPC Stage.

Variable	Category	NPC Stage		P value
		1 and 2	3 and 4	
Cigarette Type	Cloves	1	49	0,067
	Filtered	3	17	
Cigarette Amount	Heavy Smokers	1	52	0,042
	Mild-moderate Smokers	3	14	
Starting Age	≤ 10 Years	0	9	1,000
	>10 Years	4	57	

Based on the p value of the bivariate analysis for all independent variables that meet the requirements, multivariate analysis can be done because the condition of the p value for multivariate analysis must give results of $p < 0.25$. The dependent variable that can be carried out by multivariate analysis is the type of cigarette and the number of cigarettes. While the age of starting smoking cannot be

carried out multivariate analysis because $p > 0.25$. Table 3 shows that the number of cigarettes ($p = 0.043$) is a determinant factor of NPC stage in NPC patients ($p < 0.05$), and the type of cigarette ($p = 0.198$) is not a determinant factor for NPC stage in NPC patients ($p > 0, 05$).

Table 3. Multivariate Analysis

Variable	P value	Exp (B)	Coefficient	CI 95%
Cigarette Amount	0,043	0,090	-2,411	1,075-115,543
Cigarette Type	0,198	0,200	-1,607	0,842-88,825
Constant	0,000		3,951	-

4. Discussion

The results of bivariate analysis showed that there were no significant results between the type of cigarette and the age of starting smoking with stage KNF ($p = 0.067$; $p = 1,000$) while the number of cigarettes consumed showed significant results ($p = 0.042$). The results of this study are in accordance with the research conducted by

Ibrahim (2007) which states that there is no significant difference with the value of $p = 0.081$. In comparison to others, Pelucchi et al (2006) in Italy found an increase in the incidence of pharyngeal and oral cancers in smokers with filtered cigarettes compared to those smoked clove cigarette^{9,10}.

The results of this study are in accordance with the study of Zhu et al (1995) in the United States which found that the more cigarettes

consumed, the higher the level of estimation of the relative risk for the occurrence of NPC. Chow et al (2006) in the United States have increased the risk of developing NPC as much as 6.4 times in people who consume cigarettes more than 2 packs per day. It can be understood that if someone consumes more cigarettes per day, the higher the risk for the occurrence of NPC. In contrast to Cheng et al (1999) in Taiwan, it was found that the number of cigarettes consumed did not have a significant effect on the occurrence of NPC^{11,12,13}.

The results of this study are different from the research conducted by Pelucchi et al (2006) in Italy which found that people who started smoking before the age of 17 had a high risk (OR = 13.6) for the occurrence of NPC. Chow et al (2006) in the United States reported a 26-year cohort study on US war veterans with the result that people who started smoking before the age of 15 had a very high risk of developing NPC. Meanwhile, Friborg et al (2007) in Singapore found different results where the age of smoking began not to have a relationship with the occurrence of NPC, but found an association between the age of starting smoking and the incidence of oropharyngeal carcinoma. This can be caused by the very small number of cases encountered^{10,12,14}.

Based on multivariate analysis showed that the amount of cigarette consumption ($p = 0.043$) had a significant effect on the occurrence of NPC ($p < 0.05$), while the type of cigarette ($p = 0.198$) did not have a significant effect on the occurrence of NPC ($p > 0.05$). Based on the results of the calculation of the regression equation (variable number of cigarettes and types of cigarettes) $P = 31\%$. From the results of these calculations it can be concluded that in this study the probability or level of risk of a NPC patient to experience NPC stage (stage 1 and 2, stage 3 and 4) with a variable number of cigarettes and types of cigarettes was 31% while the rest (69%) might be caused by other factors. In this study the variables used as multivariate analysis were

the number of cigarettes and types of cigarettes, the age of starting smoking was not included in the multivariate analysis because it did not have a meaningful relationship. From the overall results, it can be said that there is a relationship between smoking habits and the occurrence of NPC, where smoking can be a risk factor for NPC if the number of cigarettes consumed more than 20 cigarettes per day.

5. Conclusion

Based on the results of research on the relationship of smoking habits with the stage of nasopharyngeal carcinoma in RSUP Dr. Mohammad Hoesin Palembang, the results were obtained.

1. There were 70 (100%) male patients diagnosed with nasopharyngeal carcinoma at the polyclinic ENT-HN RSUP Dr. Mohammad Hoesin Palembang.
2. There were 3 patients (4.3%) in the age group 20-29, 6 patients (8.6%) in the 30-39 age group, 24 patients (34.3%) in the age group 40-49, and 37 patients (52.9%) in the age group ≥ 50 who were diagnosed with nasopharyngeal carcinoma.
3. There are 7 (10%) nasopharyngeal carcinoma patients with jobs as PNS and 63 (90%) nasopharyngeal carcinoma patients with jobs as non PNS.
4. There are 12 (17.1%) nasopharyngeal carcinoma patients with addresses in Palembang city and 58 (82.9%) nasopharyngeal carcinoma patients with addresses outside Palembang.
5. There were 18 patients (25.7%) who had a mild complaint of epistaxis, 6 patients (8.6%) had a major complaint of ear problems, 16 patients (22.9%) had a major complaint of eye and nerve disorders, and 30 patients (42.9%) had the main complaint of a lump in the neck.
6. There are 57 (81.4%) patients with nasopharyngeal carcinoma diagnosed with stage 4, 9 (12.9%) patients with

nasopharyngeal carcinoma diagnosed with stage 3, 4 (5.7%) patients with nasopharyngeal carcinoma diagnosed with stage 2 and no patients diagnosed with stage 1.

7. There are 50 (71.4%) patients who consume clove cigarettes and 20 (28.6%) patients who consume white cigarettes.
8. There were 53 (75.7%) patients with heavy smoking and 17 (24.3%) patients with mild-moderate smoking.
9. There were 61 (87.1%) patients who started smoking > 10 years of age and 9 (12.9%) patients started smoking age ≤ 10 years.
10. Types of cigarettes have a relationship that is not significant with stage KNF and the type of clove cigarettes is a risk factor for stage KNF 3 and 4.
11. The amount of cigarette consumption has a significant relationship with NPC stage and NPC patients with heavy smoking are risk factors for stage KNF 3 and 4.
12. The age of starting smoking has a relationship that is not significant with NPC stage and NPC patients whose age starts smoking bukan 10 years instead of the risk of stage KNF 3 and 4.
13. The number of cigarettes is a determinant factor for the occurrence of NPC in stage 3 and 4 NPC patients.

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