



Correlation between Age, Gender, Occupation, Residential Area, and the Occurrence of Eyelid Tumor in Medan, Indonesia

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Abstract

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AIM: The aim of the study was to find a correlation between the occurrence of eyelid tumors with age, gender, occupation, and residential area.

SUBJECT AND METHODS: This is an analytical study with a cross-sectional approach conducted among 111 patients, includes all inpatients and outpatients who have been diagnosed with eyelid tumors starting from January 2014 to June 2018 in RSUP Haji Adam Malik, Medan, Indonesia.

RESULTS: From 111 patients, 75 women (67.6%) and 36 men (32.4%) were found (PR: 1.5, 95% clinical incidence [CI] = 0.85–2.65). Majority patients were 51–60 years old (30.6%) (PR = 2.72, 95% CI = 1.47–4.23). Mostly patients reside in lowland area (Medan city) (21.6%), while those living in highland area are more susceptible to eyelid tumor (PR = 1.13, 95% CI = 0.52–2.47%). Overall patients are indoor worker (housewives) (34.2%), but outdoor worker are more likely affected (PR = 2.26, 95% CI = 0.95–5.36). Correlation between occurrence of an eyelid tumor and age are found ($p = 0.001$; $R = 0.454$), as well as the correlation between occurrence of eyelid tumor and occupation ($p = 0.05$; $R = 0.183$). Meanwhile, the occurrence of an eyelid tumors and gender was not correlated ($p = 0.15$; $R = 0.135$) same as the occurrence of an eyelid tumor and residential area ($p = 0.723$; $R = 0.03$).

CONCLUSION: Age and occupation have a correlation with the occurrence of an eyelid tumor, while gender and residential have not correlated.

Introduction

Tumors can appear throughout the body, including the eyelids. The appearance of the tumor can originate from organs around the eyelids (skin, muscles, glands, etc.), but mostly originates from the epidermis and can be benign or malignant [1].

The development of eyelid tumors can be affected by various risk factors such as age, gender, residential area, occupation, and various other things. From research conducted by Gundogan in Ankara, the majority of patients aged over 40 years [2], while research in Bali states that the most age groups are in the age range of 61–70 years [3]. The incidence of eyelid tumors seen from gender has different results in each country, for example, in India, it was found that most of them were women, while in Bali, Indonesia, the majority are male [4], [5]. Based on the type of work, eyelid tumors are usually found in people who often work or do activities outside and the incidence will increase in people living in the highlands and equatorial regions [6].

Due to this, the study was conducted with the aim of finding a relationship between age, gender, residential area, occupation, and the occurrence of eyelid tumors.

Subjects and Methods

This study used an analytic study with a cross-sectional approach. We used total sampling as the sampling technique. Data were taken from RSUP Haji Adam Malik medical records from January 2014 to June 2018. The population was all outpatient and inpatient diagnosed with eyelids tumor with total sample 111 patients. Variables independent in this research were (1) age (2) gender (3) occupation, and (4) residential area and variables dependent were malignant eyelid tumors and benign eyelid tumors. The inclusion criteria in this study were all inpatients and outpatients who had been diagnosed with an eyelid tumor and had the results of pathological anatomy and or radiology examination. The exclusion criteria were patients with orbital tumors, conjunctival tumors, corneal tumors, scleral tumors, and uvea tract tumors.

This research has received permission from Health Research Ethical Committee of the Faculty of Medicine, Universitas Sumatera Utara, and also RSUP Haji Adam Malik has also given permission to conduct research at the hospital.

Statistical analysis

SPSS version 17.0 was used as the application to analyze the medical records in this study. This study used Chi-square to see the results of bivariate analysis, then to see the strength of the correlation between the dependent variable and the independent variable, the authors used the contingency coefficient. In this study, a prevalence ratio with a clinical incidence (CI) of 95% was sought to find out how much risk factors between age, gender, occupation, residential area, and the occurrence of eyelid tumors.

Results

From 111 medical records, malignant eyelid tumors were the most common, which were generally benign cell carcinoma (BCC), as many as 30 cases (27%) and then followed by squamous cell carcinoma, melanoma, and sebaceous carcinoma. As for benign eyelid tumors, cysts are the most common case. Twenty cases (18%) were found in Table 1.

Table 1: Distribution based on benign eyelid lesions and malignant eyelid lesions

Eyelid lesions	n (%)
Malignant eyelid lesions	
BCC	30 (27)
SCC	19 (17.1)
Melanoma	10 (9)
SBC	1 (0.9)
Benign eyelid lesions	
Cyst	20 (18)
Xanthelasma	11 (9.9)
Papilloma	6 (5.4)
Hemangioma	4 (3.6)
Neurofibromatosis	4 (3.6)
Nevus	2 (1.8)
Fibroma	2 (1.8)
Lipoma	2 (1.8)
Total	111 (100)

BCC: Benign cell carcinoma, SCC: Squamous cell carcinoma, SBC: Sebaceous carcinoma.

Based on gender, eyelid tumor patients are dominated by women, as many as 75 people (67.6%). The most common age group with eyelid tumors is 51–60 years, as many as 34 people (30.6%). Many patients who suffer from eyelid tumors reside in lowland areas, which is Medan city, as many as 24 people (21.6%). Moreover, as many as 38 people (34.2%) are found working as housewives (indoor workers). The results of these data are shown in Table 2.

Based on the results of the Chi-square test, there was a correlation between the occurrence of an eyelid tumor and occupation ($p \leq 0.05$) and there was a correlation between the occurrence of eyelid tumors and age groups ($p \leq 0.05$). For the contingency coefficient test, it was found that the relationship between eyelid tumors and the age group had moderate strength. Besides, there are also shown the results of the prevalence ratio in Table 3.

Table 2: The characteristics distribution of patients with eyelid tumors based on gender, age group, residential area, and occupation

Characteristics	n (%)
Gender	
Male	36 (32.4)
Female	75 (67.6)
Age group	
1–10	3 (2.7)
11–20	7 (6.3)
21–30	8 (7.2)
31–40	13 (11.7)
41–50	17 (15.3)
51–60	34 (30.6)
61–70	15 (13.5)
>70	14 (12.6)
Lowlands residential area	
Medan	24(21.6)
Deli Serdang	9 (8.1)
Langkat	8 (7.2)
Tanjung Balai	8 (7.2)
Asahan	6 (5.4)
Binjai	4 (3.6)
Padang Lawas Utara	4 (3.6)
Aceh Singkil	4 (3.6)
Labuhan Batu	3 (2.7)
Batubara	3 (2.7)
Nias	2 (1.8)
Gunung Sitoli	2 (1.8)
Tapanuli Selatan	2 (1.8)
NAD	2 (1.8)
Aceh Utara	2 (1.8)
Aceh Tamiang	2 (1.8)
Padang Sidempuan	1 (0.9)
Tebing Tinggi	1 (0.9)
Serdang Bedagai	1 (0.9)
Langsa	1 (0.9)
Aceh Timur	1 (0.9)
Highlands residential area	
Karo	5 (4.5)
Simalungun	4 (3.6)
Toba Samosir	3 (2.7)
Aceh Tenggara	3 (2.7)
Tapanuli Utara	2 (1.8)
Pematang Siantar	2 (1.8)
Pakpak Bharat	1 (0.9)
Humbang Hasundutan	1 (0.9)
Indoor workers	
Housewife	38 (34.2)
Entrepreneur	23 (20.7)
Civil servants/Employees	12 (10.8)
Student	7 (6.3)
Unemployment/Retired	6 (5.4)
Midwife	2 (1.8)
Teacher	1 (0.9)
Outdoor workers	
Farmer	20 (18)
Merchant	2 (1.8)

Discussion

From 111 patients, 75 of them were women (67.7%), while men were 36 people (32.4%). This result is consistent with the research conducted by Mohan and Letha (2017) in Kerala, South India, and Hui *et al.*,

Table 3: Chi-square analysis, contingency coefficient, and prevalence ratio between types of eyelid tumors with gender, age group, occupation, and residential area

Independent variables	Types of eyelid tumor		PR (95% CI)	p-value	r
	Malignant tumor n (%)	Benign tumor n (%)			
Gender					
Male	23 (19.5)	13 (16.5)	1.5	0.150	0.135
Female	37 (40.5)	38 (34.5)	(0.85–2.65)		
Residential area					
Highlands	48 (48.6)	42 (41.4)	1.13	0.752	0.03
Lowlands	12 (11.4)	9 (9.6)	(0.52–2.47)		
Occupation					
Indoor worker	44 (48.1)	45 (40.9)	2.26	0.05*	0.183
Outdoor worker	16 (11.9)	6 (10.1)	(0.95–5.36)		
Age group					
<50 years	12 (25.9)	36 (22.1)	2.72	0.001*	0.454**
>50 years	48 (34.1)	15 (28.9)	(1.74–4.23)		

CI: Clinical incidence.

(2017) in Bandung, Indonesia, where the majority of patients are women [5], [7]. However, other countries have different results, such as in Bali, Indonesia, there are more men than women 59.1%: 40.2% and in the city of Ahmadabad, India, men are 57.82% while women are 42.18% [3], [8]. There is no known cause of a higher incidence of eyelid tumors in women, but some researchers suspect an increased incidence of eyelid tumors in women due to the use of excessive sun cream on the eyelid area and long-term use of oral contraceptives or hormone replacement therapy [7], [9]. The p value obtained is 0.15 ($p > 0.05$) which means there is no correlation between the occurrence of eyelid tumors and gender. The correlation was also very low, where r obtained 0.135 (0.1–0.19 = low degree) and the risk factor for men was 1.5 times greater than female (PR = 1.5, 95% CI = 0.85–2.65).

The most dominant age group is 51–60 years, which is as many as 34 patients (36%). These results were consistent with research conducted in Ankara, where patients with eyelid tumor were at most 40 years old and the study conducted in Bandung found that the majority of patients were over 60 years of age [2], [8]. This fits with the theory that as we get older, the duration of exposure to carcinogenic substances also increases [3]. From the analysis, it was found that the age group above 50 years was 2.72 times greater of developing eyelid tumors (PR = 2.72, 95% CI = 1:47 to 4:23). In addition, the p-value obtained was 0.001 ($p < 0.05$) which was significant. The correlation value obtained based on age group data is 0.454, which means the correlation strength is moderate (0.4–0.59).

The majority of patients with eyelid tumors indoor workers, such as housewives, as many as 38 people (34.8%). These results contradict with research conducted in Bali, where the majority of patients were outdoor workers and research in Croatia, where outdoor workers (72.4%) are more susceptible to tumors associated with skin in the head area, in this case, the eyelids [3], [10]. From research conducted in Sweden, indoor workers have the same risk of skin tumors as high as outdoor workers due to repeated and prolonged sun exposure to indoor workers who do outdoor work in their daily activities, leisure time, or during the holiday [11]. Moreover, in Indonesia, indoor workers (e.g., housewives, employees, etc.) often perform daily activities outdoors also Indonesia lies on the equator, so this contributes in increasing the risk of eyelid tumors in indoor workers. Nonetheless, the risk factors for eyelid tumors were 2.26 times greater for outdoor workers (PR = 2.26, 95% CI = 0.95–5.36). The p-value obtained is 0.05 ($p < 0.05$) which means there is a relationship between the type of work and the occurrence of eyelid tumors. While the correlation value is 0.183, which means that the correlation strength is very low (0–0.19).

Malignant eyelid tumors are the most common type in this study. These malignant tumors are BCC,

which is 30 cases from 111 medical records. This because prolonged exposure to ultraviolet (UV) light is one of the main risk factors for BCC, in addition, the incidence of BCC will increase in the equatorial region because exposure to UV light in this region is very intense [12], [13], [14], [15]. Theory is in line with the previous study in Saudi Arabia, where the incidence of BCC is low due to national customs and traditions [16].

Patients in this research mostly reside in the lowlands, which is in Medan city, as many as 24 people (21.4%). These results contradict the theory which states that in the highland areas, the intensity of UV exposure will increase, this also applies to regions with tropical climates and located in the equatorial region. Moreover, people who lived on the equator often wear thin so that longer exposure to sunlight causes a greater risk of skin cancer [6]. This statement was not entirely contradictory because Indonesia is located on the equator and has a tropical climate. Hence, patients who live in the highlands or lowlands have equally high risk. However, in terms of risk factors, people living in highland areas were 1.13 times more likely to develop eyelid tumors (PR = 1.13, 95% CI = 0.52–2.47). The p-value obtained was 0.723 ($p > 0.05$), which means there is no relationship between the residential area with eyelid tumors. Other than that, the r value is 0.03. This means that the correlation between tumor eyelids with residential areas is very low (0–0.19).

Conclusion

Age and occupation have a correlation with the occurrence of an eyelid tumor, while gender and residential have not correlated. Therefore, it is highly recommended that people who live in the equatorial area (such as Indonesia, Southeast Asia countries) and living in the highland area be given education about the use of sun protection in their daily activities indoors or outdoors and the use of sun protection is highly recommended for adults over 30 years old.

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