

THE RISK FACTORS OF PENILE CANCER PATIENTS IN ARIFIN ACHMAD REGIONAL GENERAL HOSPITAL, RIAU PROVINCE, INDONESIA.

Zuhirman Zamzami

Urology Division, Surgery Department, Medical Faculty, Riau University, Indonesia.

Abstract

Objective: To evaluate the incidence rate, patient profile, and risk factors of penile cancer patients. **Material & method:** We reviewed the medical records of incidence rate, patient profile, and risk factors patients of penile cancer in Arifin Achmad Hospital Regional General of Riau Province in January 2013 to December 2017. The data collected were age, histopathology types, smoking history, ethnic/tribes, circumcision history and city/district origin. Approval on the study was obtained from the Ethical Review Board for Medicine and Health Research, Medical Faculty, University of Riau. **Result:** There were 20 penile cancer patients. Penile cancer was frequently (40%) diagnosed in the 46-55 age group. Most patients came from Pekanbaru city in 25% and most (60%) patients were Batak tribes followed by Malay tribes (15%). Sixty percent of patients had risk factors for smoking history and 75% were not circumcised. All penile cancer patients had histopathology results in the form of squamous cell carcinoma. **Conclusion:** Risks factors of penile cancer patients in our hospital were Pekanbaru city origin, Batak tribe, smoking history, and not circumcised.

Keywords: Penile cancer; Squamous cell carcinoma; Risk factors.

Introduction

The highest incidence of penile cancer cases in the world was recorded in Brazil with an average of 2.9-6.8 per 100,000 men, where the highest prevalence was Caucasian people who were not circumcised and had low income [1]. Data in Asia varied from 0.04% in Israel, 0.15% in Iran to 0.2% in Japan [2, 3]. In Indonesia, it is difficult to get the actual incidence of penile cancer. Generally, the most age is found in Indonesia at the age of 40-50 years (26.1%), with the majority had no circumcision history (47.8%) with the location of the primary lesion at the glans penis (18.8%), penile shaft (15.9%), and combination glans penis -shaft penis (34.8%) [4]. In India, the majority (72.11%) were found to be >50 years old, with 19.5% having a circumcision history in adults and 25.9% of patients had phimosis. The location of the lesion was mostly on the glans (60%) and prepuce (32%) and penile shaft at 8% [5].

Many factors might cause penile cancer, such as men who had not been circumcised, smoked, and age [4]. Men who were not circumcised at birth / adolescents had a higher risk of penile cancer. This was related to the incidence of phimosis in patients. Phimosis is the condition of the penis skin (prepuce) attached to the head of the penis and results in a blocked urinary tract. Phimosis is associated with a lack of hygiene which triggers the accumulation of smegma, chronic inflammation and increases the risk of developing penile cancer. Phimosis is also associated to 90% of penile cancer cases [6].

In smokers, carcinogenic chemicals that enter the body might cause DNA damage and increase cancer risk.

Epidemiological studies state that a smoker had a 4.5 times increase in penile cancer [6].

Penile cancer usually occurs in older men and the incidence increases with age. Peak frequency occurs between 60 and 70 years. This occurs due to the accumulation of damage from the cell's DNA over time. Damage might occur due to biological processes and exposure to risk factors. In 95% of cases of penile tumors are squamous cell carcinoma. Penile cancer might appear as flat or ulcerated exophytic papillary lesions, with the latter having a bad prognosis [7].

Materials and Methods

This was a descriptive study by reviewing medical records of incidence rate, patient profile, and risk factors of penile cancer patients in Arifin Achmad Regional General Hospital of Riau Province in January 2013 up to December 2017. The data collected were age, histopathology types, smoking history, ethnic/tribes, circumcision history and city/district origin. Approval on the study was obtained from the Ethical Review Board for Medicine and Health Research, Medical Faculty, University of Riau.

Results

There were 20 penile cancer patients and the number of patients increased each year except in 2015 and 2016 (Table 1). Most of the patients were in the group age of 46-55 years old (Table 2). Most patients come from Pekanbaru in 25%. (Table 3), and most (60%) patients were Batak tribes followed by Malay tribes. Sixty percent of patients had risk factors for smoking history and 75% were not circumcised. All histopathology results of the penile cancer patients were squamous cell carcinoma.



eISSN: 2522-7165
pISSN: 2520-7342

Correspondence: Zuhirman Zamzami, Urology Division, Surgery Department, Medical Faculty, Riau University, Indonesia. Email: zuhirman.zamzami@yahoo.com.



Table 1. Distributive frequency of penile cancer patients according to year.

Year	N	F (%)
2013	1	5.0
2014	4	20.0
2015	3	15.0
2016	2	10.0
2017	10	50.0
Total	20	100

Table 2. Distributive frequency of penile cancer patients according to age.

Age (year)	N
≤45	5 (25)
46-55	8 (40)
56-65	5 (25)
>65	2 (10)

Table 3. Distributive frequency of penile cancer patients according to origin, tribe, smoking history.

Origin	Origin	N
	Pekanbaru City	5 (25)
	Dumai City	1 (5)
	Bengkalis District	4 (20)
	Indragiri Hilir District	2 (10)
	Indragiri Hulu District	1 (5)
	Kampar District	1 (5)
	Kuansing District	0
	Pelalawan District	0
	Rokan Hilir District	1 (5)
	Rokan Hulu District	2 (10)
	Siak District	3 (15)
	Meranti Island District	0
Tribe	Melayu	3 (15)
	Minang	1 (5)
	Batak	12 (60)
	Banjar	2 (10)
	Javanese	2 (10)
Smoking history	No	8 (40)
	Yes	12 (60)
Histo-pathology Types	Squamous cell carcinoma	20 (100)
	Non-squamous cell carcinoma	0
Circumcised History	No	15 (75)
	Yes	5 (25)

Discussion

The number of patients who diagnosed with penile cancer in this study were 20 people. The number of cases of penile cancer in Arifin Achmad Hospital did not increase from Murniati et al on research from January 2012 to December 2016 but it was increase from Yuwinanda et al on research from January 2006 to December 2009 in 11 cases [8, 9].

This study found that cases of penile cancer were more prevalent in the age group 46-55 years (40%). This was similar to Prayoga's et al study showed that penile cancer often found in the age range of 40-60 years [11]. This study was also similar to the research of Murniati et al found the highest age group of penile cancer patients by 10 cases (50%) in the age range of 46-55 years. This study was also in accordance with the study of Yuwinanda et al found that the highest age range of penile cancer patients occurred in the 45-64 years age group (72.72%) [8, 9].

Patients from Pekanbaru City had the highest percentage in this study, which was 25%. This might be caused by adequate facilities and infrastructure so that patients might easily go to Arifin Achmad Hospital in Riau Province. Besides that, Pekanbaru City has the highest population compared to other regencies or cities in Riau Province.

The data obtained in this study, showed Batak-tribe patients had the most cases in 12 cases (60%) followed by Malay tribes in 3 cases (15%). This is in accordance with the study of Deborah (2012) found that most penile cancer patients came from the Batak tribe (66.75%) [10]. Slightly different from a study by Prayoga et al in Sardjito Hospital in Yogyakarta found that most penile cancer patients came from Javanese (91.43%) [11]. Also different from the research by Tranggono et al conducted at the Hospital Cipto Mangunkusumo and Dharmas Cancer Hospital who found the most penile cancer patients came from Chinese ethnicity (24.6%) [4]. This was thought to be due to geographical differences and population distribution in the area where this research was conducted and the time difference in conducting research.

Men who are not circumcised and lack personal hygiene are one of the risk factors for penile cancer. The accumulation of smegma under uncircumcised prepuce often causes chronic inflammation which is thought to be closely related to the incidence of penile cancer. The Batak tribe was a tribe that mostly does not require the community to be circumcised, thus causing the incidence of penile cancer to be higher in this tribe. It is expected that circumcision might prevent penile cancer in men [8].

Cases of penile cancer with smoking history were found in 12 (60%) cases. According to the central statistics agency, there are 29.61% of the population aged ≥ 15 years in Riau Province are smokers and the average Indonesian population who smokes consumes 12 cigarettes per day [12].

Free radicals in cigarettes might increase the risk of cancer through DNA damage. Various contents of cigarettes have been proven to damage DNA such as benzene, polonium-210, benzo(a)pyrene and nitrosamines. In addition, in cigarettes there is also a nicotine content that can cause dependence on the wearer. The strong drive that emerges to continue smoking is difficult to eliminate especially in people who are addicted to cigarettes [13].

In this study, all penile cancer patients had histopathology results in the form of squamous cell carcinoma. This is in accordance with the study of Koifman et al found that 230 (100%) cases had histopathology results in the form of squamous cell carcinoma [14]. This study was similar to that of Murniati et al found that 20 (100%) cases had histopathology results in the form of squamous cell carcinoma [8].

Based on the results of histopathology examination, broadly speaking penile cancer can be differentiated into 2 types, namely squamous cell carcinoma and non-squamous cell carcinoma. This type of division affects the prognosis of the disease. Squamous cell carcinoma has a better prognosis than other types. Squamous cell carcinoma types only have local destructive ability, rarely metastasize and have a low mortality rate [8]. Circumcision history in this study was 5 (25.0%) cases of penile cancer while patients who did not have circumcision history were 15 (75.0%). This is in accordance with a study by Prayoga et al found that 14.2% of penile cancer patients had circumcision history and as many as 42.9% of cases [11].

The procedure of circumcision might prevent men from developing penile cancer, an invasive disease that destroys almost exclusively for uncircumcised men. In circumcised men, the lifetime risk of penile cancer is very low and is estimated to be 1 in 50,000 to 1 in 12,000,000.

For 213 cases in California only 2 of 89 men with invasive penile cancer were circumcised in infancy, so it might be concluded that uncircumcised man had 22 times higher risk [15].

Conclusion

Risks factors of penile cancer patients in our hospital were Pekanbaru city origin, Batak tribe, smoking history and uncircumcised.

Conflict of Interest: The author has nothing to disclose.

References

- [1] Favorito LA, Nardi AC, Ronalsa M, Zequi SC, Sampaio FJ, Glina S. Epidemiologic study on penile cancer in Brazil. *Int Braz J Urol.* 2008;34:587-91
- [2] Graffland NM, Verhoeven RHA, Coeberg JW, Horenblas S. Incidence trends and survival of penile squamous cell carcinoma in the Netherlands. *Int J Cancer.* 2010; 128: 426-32
- [3] Minhas S, Manseck A, Watya S, Hegarty PK. Penile Cancer- Prevention and Premalignant Conditions. *Urology.* 2010;76 (S2A):S24-S35
- [4] Tranggono U, Umbas R. Karakteristik dan Terapi Penderita Keganasan Penis di RS Cipto Mangunkusumo dan RS Kanker Dharmas. *Indonesian Journal of Cancer.* 2008;2:45-50
- [5] Pahwa M, Girotra M, Rautela A, Abraham R. Penile Cancer in India: A Clinicoepidemiological Study. *Gulf J Oncol.* 2012;12:7-10
- [6] Daling JR, Madeleine MM, Johnson LG, Schwartz SM, Shera KA, Wurscher MA, et al. Penile cancer: importance of circumcision, human papillomavirus and smoking in in situ and invasive disease. *Int J Cancer.* 2005;116:606-16
- [7] PG Konan , CC Vodi , AH Dekou , A. Fofana , EE Gowe , K. Manzan. Cancer of the penis associated with HIV: a report of three cases presenting at the CHU cocody, ivory coast. *BMC Urol.* 2015; 15: 112
- [8] Murniati DS. The Profile of managements of penile cancer patients in Arifin Achmad Regional General Hospital, Riau, Indonesia in 2011-2016. {scription] Pekanbaru: Riau University. 2017
- [9] Yuwinanda DP. The Profile of urology malignancies in Arifin Achmad Regional General Hospital, Riau, Indonesia in 2006-2009. {scription] Pekanbaru: Riau University; 2011.
- [10] Blandy, Kaisary. *Lecture Note Urology.* 6th Edition. London. Wiley-Blackwell. 2012;225-9.
- [11] Prayoga DA, Tranggono U. Clinical and managements evaluation of penile cancer in Sardjito General Hospital, Yogyakarta. *Indo J Cancer.* 2015;10 (1):29-34
- [12] Central Statistic Agency of Riau Province. Smoking percentage of people ≥ 15 year old according to province. 2016.
- [13] Mental Health UK [homepage on the Internet]. Smoking and mental health. [cited 2018 December 22]. Available from : <https://www.mentalhealth.org.uk/a-to-z/s/smoking-and-mental-health>.
- [14] Koifman L, Vides AJ, Koifman P, Carvalho JP, Omellas AA. Epidemiological Aspect of Penile Cancer in Rio de Janeiro: Evaluation of 230 cases. *International Braz J urol.* 2011; 37(2): 231-43
- [15] Morris B J , Gray R H , Castellsague X , Bosch FX , Halperin DT , Waskett J H , Hankins C A. The Strong Protective Effect of Circumcision against Cancer of the Penis. *Advance in Urology.* 2011. 1-21.