RISK FACTORS OF BLADDER CANCER PATIENTS IN ARIFIN ACHMAD REGIONAL GENERAL HOSPITAL, RIAU PROVINCE, INDONESIA

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ABSTRACT

Objective: *This study aims to describe the risk factors of bladder cancer patients in Arifin Achmad Regional General Hospital, Riau Province, Indonesia.* ***Material & Methods:*** *We reviewed the medical records of bladder cancer patients managed in Arifin Achmad Regional General Hospital from January 2013 - December 2017. The data collected were sex, age, histopathology types, staging, smoking history, occupation, ethnic/tribes, and city/district origine. Statistical analysis of univariate was used. Approval on the study was obtained from the Ethical Review Board for Medicine and Health Research, Medical Faculty, University of Riau.* ***Results:*** *There were 101 bladder cancer patients consisting of 83.2% patients with transitional cell carcinoma and 65.3% with advanced stage. The result showed the most common (82.2%) patients were males and 35.6% of patients were in age 51-60 year old group, with the youngest was in 9 year old group and the oldest is 85 years. The most common risk factors of bladder cancer patient were farmers in 29.7% and the non-smoking patients were in 52.5%, Malay ethnic in 30.7% and Pekanbaru origin in 30.7% of patients.* ***Conclusion:*** *Bladder cancer risk factors in Arifin Achmad Regional General Hospital were males, farmers, Malay ethnic, and Pekanbaru origin.*

Keywords: *Bladder cancer, risk factors.*

ABSTRAK

Tujuan: *Tujuan penelitian ini adalah untuk mengetahui gambaran faktor-faktor risiko kanker kandung kemih di Rumah Sakit Umum Daerah (RSUD) Arifin Achmad Provinsi Riau, Indonesia.* ***Bahan & Cara:*** *Kami melihat kembali semua rekam medis pasien kanker kandung kemih di RSUD Arifin Achmad dari Januari 2013 - Desember 2017. Data yang dikumpulkan adalah jenis kelamin, usia, jenis histopathology, stadium, riwayat merokok, pekerjaan, etnik/suku dan asal daerah/kota. Analisis statistik yang digunakan adalah univariat. Penelitian ini telah disetujui oleh Ethical Review Board for Medicine and Health Research, Fakultas Kedokteran, Universitas Riau.* ***Hasil:*** *Terdapat 101 pasien kanker kandung kemih terdiri dari 83.2% karsinoma sel transisional dan stadium terbanyak adalah stadium lanjut sebesar 65.3%. Hasil penelitian menunjukkan bahwa kasus terbanyak pada jenis kelamin laki-laki sebesar 82.2% dan kelompok usia terbanyak adalah kelompok usia 51-60 tahun sebesar 35.6% dengan usia termuda 9 tahun dan usia tertua 85 tahun. Faktor risiko pasien kanker kandung kemih terbanyak adalah pada pekerja petani/perkebunan sebesar 29.7%, pasien yang tidak merokok sebesar 52.5%, berasal dari Suku Melayu sebesar 30.7% dan berasal Kota Pekanbaru sebesar 30.7%.* ***Simpulan:*** *Kanker kandung kemih lebih sering pada laki-laki, usia 51-60 tahun, petani, suku Melayu dan berasal dari Kota Pekanbaru.*

Kata Kunci: *Kanker kandung kemih, faktor risiko.*

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INTRODUCTION

Bladder cancer is cancer that developed in bladder tissue characteristically with gross, painless, and intermittent hematuria.[1] Bladder cancer is the 11th malignancy in the world and 2nd most malignancy in urology.[2] About 9 of 10 bladder cancer patients are over the age 55 years old. The average age at the time of diagnosis is 73 years old.[3] In Indonesia, the incidence of bladder cancer were 6.978 cases with ratio men and women is 4:1. The mortality rate were 3.599 cases.[4]

The most histopathology type of bladder cancer is transitional cell carcinoma which is more than 90%.[5] The staging system most often used for bladder cancer is from the American Joint

Committee on Cancer (AJCC) TNM (Tumor, Nodes, Metastasized) system.[1] The main risk factors that often cause bladder cancer are smoking and chemical exposure. Smoking is caused by the presence of nitrosamine compound.[6] Chemical exposure that have potential to cause bladder cancer are aromatic amines (benzidine, 4-aminobiphenyl, 2-naphtylamine, 4-chloro-o-toloudine)[7] and polycylic aromatic hydrocarbons (PAHs) which are widely used in the chemical industry, dyes industry, rubber industry, leather industry, aluminium industry, and painters.[8]

OBJECTIVE

This study aims to describe the risk factors of bladder cancer patients in Arifin Achmad Regional General Hospital, Riau Province, Indonesia.

MATERIALS & METHODS

This was a descriptive retrospective study by reviewing the medical records of bladder cancer patients in Arifin Ahmad Regional General Hospital Pekanbaru from January 2013 to Desember 2017. The data collected were sex, age, histopathology types, staging, smoking history, occupation, ethnic/tribes, and city/district origine. Statistical analysis of univariate was used. Approval on the study was obtained from the Ethical Review Board for Medicine and Health Research, Medical Faculty, University of Riau.

RESULTS

There were 101 bladder cancer patients in this study. Table 1 showed consisting of 83.2% patient with transitional cell carcinoma. Table 2 showed 65.3% with advanced stage. Table 3 showed the most common patients were male in 82.2%. Table 4 showed 35.6% of patient with bladder cancer was in age 51-60 years old. Table 5 showed the most common occupation as risk factor of bladder cancer patient was farmers were in 29.7% of patients. Table 6 showed most (52.5%) patients did not have smoking history. Table 7 showed the most bladder cancer ethnic were Malay ethnic in 30.7%. Table 8 showed most patients were from Pekanbaru City in 30.7%.

Table 1. Frequency distribution of bladder cancer according to histopathology types.

Histopathology	Frequency (n)	Percentage (%)
Transitional Cell Carcinoma	84	83.2
Squamous Cell Carcinoma	8	7.9
Adenocarcinoma	6	5.9
Rhabdomiosarcoma	1	1
Clear Cell Carcinoma	2	2
Total	101	100

Table 2. Frequency distribution bladder cancer according to staging.

Staging	Frequency (n)	Percentage (%)
Pt<2, N0 M0	28	27.7
Pt≥2, N0 M0	65	64.3
Pt≥2, N+ M0	4	4
Pt≥2, N+ M+	4	4
Total	101	100

Table 3. Frequency distribution of bladder cancer according to sex.

Sex	Frequency (n)	Percentage (%)
Male	83	82.2
Female	18	17.8
Total	101	100

Table 4. Frequency distribution of bladder cancer according to age.

Age	Frequency (n)	Percentage (%)
< 31 years	4	4
31 – 40 years	11	10.9
41 – 50 years	11	10.9
51 – 60 years	36	35.6
61 – 70 years	19	18.8
71 – 80 years	13	1.9
> 80 years	7	6.9
Total	101	100

Table 5. Frequency distribution of bladder cancer according to occupation.

Occupation	Frequency (n)	Percentage (%)
Farmer	30	29.7
Laborer	5	4.9
Civil Servant	1	1
Employee	14	13.9
Enterpreneur	19	18.8
Army	1	1
Fishherman	3	3
No Job	20	19.8
No available	8	7.9
Total	101	100

Table 6. Frequency distribution of bladder cancer according to smoking history.

Smoking History	Frequency (n)	Percentage (%)
Yes	29	28.7
No	53	52.5
Not available	19	18.8
Total	101	100

Table 7. Frequency distribution of bladder cancer according to ethnic/tribes.

Ethnic	Frequency (n)	Percentage (%)
Malay	31	30.7
Minang	12	11.9
Batak	14	13.8
Java	25	24.7
Banjar	4	4
Chinese	1	1
Not available	14	13.9
Total	101	100

Table 8. Bladder cancer according to cities/districts.

City/District	Frequency (n)	Percentage (%)
Pekanbaru	29	28,7
Dumai	7	6,9
Bengkalis	9	8,9
Indragiri Hulu	4	4
Indragiri Hilir	8	7,9
Kampar	12	11,9
Kepulauan Meranti	3	3
Kuantan Singingi	7	6,9
Pelalawan	2	2
Rokan Hulu	5	5
Rokan Hilir	6	5,9
Siak	7	6,9
Others	2	2
Total	101	100

DISCUSSION

This study showed the most histopathology of bladder cancer is transitional cell carcinoma (Table 1). A previous study by Lestari (2017) in Arifin Achmad Regional General Hospital in 2011-2015 showed the most common histopathology type in advanced bladder cancer patients was transitional cell carcinoma (85%).[9] Advanced stage bladder cancer was more often than superficial stage (Table 2). It is different in developed countries, mostly the superficial stage around 70% and only 30% have been found at advanced stage. Differences in research results occurred due to differences in diagnostic facilities of each hospital. Adequate diagnostic facilities varied. Developed countries have more adequate diagnostic equipment so that the findings of superficial stage are detected earlier than advanced stage bladder cancer.[10-11]

Bladder cancer patient suffered more male than women (Table 3). Previous study by Lestari (2017) in Arifin Achmad Regional General Hospital, Pekanbaru, Riau Province, Indonesia in 2011-2015 found advanced stage bladder cancer suffered more (73%) male patients than (7%) in female patient.[9] This study suited several studies stated that bladder cancer were more found in men with the incidence four times higher than in women.[8]

Age is one of the risk factors for bladder cancer, this study showed that the highest age group of bladder cancer patients was 51-60 years old at 35.6% (36 cases) (Table 4). The average age of a bladder cancer patient was 56 years old with the youngest age of 9 years and the oldest age was 85 years. Bladder cancer is more common in older people because there will be a DNA mutation that can interfere with the control of cell proliferation processes and control of cell apoptosis. And also supported by other factors, like smoking habits and the environment namely exposure to carcinogens.[6]

Chemical exposure at work can be a risk factor for bladder cancer. This study showed that most bladder cancer patients mostly was farmer (29.7%) (Table 5). This study suited other studies showing that farmers have a significant relationship to the occurrence of bladder cancer in transitional cell carcinoma and squamous cell carcinoma. This is because farmers have risks such as exposure to chemicals (pesticides) used or biological agents such as fungi found in agricultural areas[12] and waters around Egyptian agriculture can cause schistosoma infections which increases the risk of bladder cancer as squamous cell carcinoma types.[13-14]

The results of this study showed that bladder cancer patients who smoked were 28.7% (29 cases) less than non-smoking bladder cancer patients by 52.5% (53 cases), but there were 18% (19 cases) that were no data (Table 6). This result does not necessarily describe the actual situation because the data is data when the patient is treated not their smoking history. This study result was different from a study by Efendi (2015) in Haji Adam Malik Hospital, Medan showed smoker (54%) were more often than non-smoker (46%).[15] This is because nitrosamine compounds in cigarettes can bind to

tryptophan to form mutagenic nitrosamines which will bind to DNA. So the process of protein synthesis and enzyme work in the cell cycle is impaired, especially in proteins or enzymes that play a role in growth signaling factors such as CDK, EGFR, FGF , and MDM2.[6]

This study results showed the highest rates of bladder cancer patients were Malay ethnic by 30.7% (Table 7). There has not yet been a publication of research that discusses tribal relations in Indonesia with the incidence of bladder cancer. White ethnic Americans are twice as likely to have bladder cancer as African-Americans or Hispanic-Americans.[3] A research by Yee et al (2011) found that the incidence of bladder cancer was highest among white American ethnic in 81.63% (163.973 cases) and the survival of bladder cancer patients is higher in white ethnic. These ethnic differences will decrease over time because awareness about health has increased and there are socio-economic improvements, and access to better care.[16]

Most regions of bladder cancer patients are from Pekanbaru in 28.7% (29 cases) (Table 8). This is related to the nearest access to health services because Arifin Achmad General Regional Hospital of Riau Province is in Pekanbaru city so it is easier accessible by patients from Pekanbaru.

Several studies have shown a link between environmental factors for bladder cancer such as exposure to Polycyclic aromatic hydrocarbons (PAHs) which play a role in the occurrence of bladder cancer.[7] PAHs have been a concern because some compounds have been identified as carcinogenic, mutagenic, and teratogenic. Pollutant sources by PAHs come from fossil fuels and biomass, incomplete combustion processes containing carbon fuels such as wood burning, coal, diesel, asphalt, fat, tobacco, oil, and tar deposits. PAHs can come from forest fires and cigarette smoke and this is linked to the occurrence of forest fires in Riau Province.[17] Research conducted by Burtsyn et al. (2007), PAHs exposure can become bladder cancer within 15 years, but further research is needed on the duration and duration of exposure and other factors that can increase the risk of bladder cancer.[18]

CONCLUSION

Bladder cancer risk factors in Arifin Achmad Regional General Hospital, Pekanbaru Riau Province, Indonesia, were males, farmers, Malay ethnic, and Pekanbaru origin.

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