

Five-Year Profiles of Prostate Cancer Patients in A Tertiary Hospital in Indonesia

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Abstract

Prostate cancer is a malignant disease of the urogenital system, which is the second most common cancer in men and one of the leading causes of death in male population. In Bandung City, Indonesia, no data are available regarding the profile of prostate cancer patients. This study aimed to determine the profile of prostate cancer patients treated at Dr. Hasan Sadikin General Hospital Bandung, Indonesia, which is the tertiary hospital in the most populated province in Indonesia, during the period of 2015–2019. This was a retrospective descriptive study on secondary data from medical records. Results showed that most prostate carcinoma patients were 67.95 ± 8.946 years old with most of them (n=92, 81.4%) had a history of hypertension and 62 patients (54.9%) did not have any history of smoking. Most patients had 20–40 cc prostate volume with hard consistency and without nodules; a PSA level of >20 ng/mL; and a gleason score of 8-10 or poorly differentiated. Age affected incidence of prostate carcinoma with the highest prostate volume (20–40 cc). The average PSA was 504.66 ± 10.26 and the median gleason score was 8 (6-10). The highest prostate volume is 20–40 cc with hard consistency without nodule and the highest PSA value is >20 ng/mL with a Gleason score of 8–10, showing a poorly differentiated condition.

Keywords: Gleason; prostate carcinoma; prostate specific antigen

Profil Lima Tahun Pasien Penderita Kanker Prostat di Rumah Sakit Pusat di Indonesia

Abstrak

Kanker prostat adalah keganasan pada sistem urogenital yang merupakan kanker paling umum kedua pada pria dan salah satu penyebab utama kematian pada populasi pria. Belum ada data mengenai profil kanker prostat di Bandung. Penelitian ini bertujuan mengetahui profil pasien kanker prostat yang dirawat di Rumah Sakit Dr. Hasan Sadikin Bandung, Indonesia yang merupakan rumah sakit tersier di provinsi terpadat di Indonesia, selama periode 2015–2019. Jenis penelitian yang digunakan adalah penelitian deskriptif retrospektif. Sampel diambil berdasarkan data sekunder dari rekam medis. Hasil penelitian menunjukkan bahwa penderita karsinoma prostat terbanyak adalah 67,95 ± 8,946. Sebanyak 92 pasien (81,4%) pasien karsinoma memiliki riwayat hipertensi dan 62 pasien (54,9%) tidak memiliki riwayat merokok. Sebagian besar pasien memiliki volume prostat 20–40 cc dengan konsistensi keras dan tanpa nodul, kadar PSA >20 ng/mL dan skor gleason 8–10 (berdiferensiasi buruk). Faktor usia memengaruhi peningkatan kejadian karsinoma prostat dengan volume prostat terbanyak pada kelompok 20–40 cc, rata-rata PSA 504.66 ± 1026.47 dan median skor gleason 8 (6-10). Pasien kanker prostat terbanyak berada pada kelompok usia 60–69 tahun dan 62 pasien tidak memiliki riwayat merokok. Pasien karsinoma prostat ditemukan volume terbesar, yaitu 20–40 cc dengan konsistensi keras tanpa nodul dengan nilai PSA tertinggi >20 ng/mL dan skor Gleason 8–10 yang menunjukkan berdiferensiasi buruk.

Kata kunci: Gleason, karsinoma prostate, PSA

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Introduction

Prostate carcinoma is a cancer originating from prostate epithelial cells.¹ Prostate cancer is the second most common cancer in adult males, which contributes approximately 23% of all malignancy cases.^{2,3,4} Prostate cancer is also the third leading cause of death associated with men’s malignancies, which has increased significantly since 1990.^{3,5} The prevalence of prostate cancer in Indonesia in 2013 is 0.2%, involving 25,012 patients. The provinces with the highest prevalence for prostate cancer are Yogyakarta, Bali, North Sulawesi, and South Sulawesi, with 0.5% prevalence rate. The estimated absolute number of prostate cancer patients in North Sulawesi province is 601 cases.⁶ So far, the known risk factors associated with prostate cancer are age, race, and family history of prostate cancer. Generally, prostate cancer affects older adult men, peaking at the age of 65–75 years.

Data on the number of cases of prostate carcinoma are still incomplete in Indonesia. Three urology education centers (Jakarta, Bandung, and Yogyakarta) recorded 761 cases in the last eight years between 2004–2011. The number of prostate carcinoma patients at the National General Hospital Dr. Cipto Mangunkusumo and Dharmais Cancer Hospital in 2001–2006 has increased twice when compared to 1995–2000, with an average number of 70–80 new cases annually.⁷

Data in the US show that more than 90% of prostate cancer patients are diagnosed at an earlier stage. In contrast, in Indonesia, many people are diagnosed at an advanced stage due to delayed diagnosis. Neither national guidelines nor incidence data for prostate carcinoma in Indonesia are available at the time of this study. The unequal distribution of facilities and urologists in various parts of Indonesia has resulted in differences in diagnosing and managing prostate carcinoma patients. Therefore, this study aimed to determine the profile of prostate carcinoma at Dr. Hasan Sadikin General Hospital Bandung, West Java, Indonesia from 2015 to 2019.

Methods

This study used a prospective descriptive research design. This study aimed to determine the profile of prostate carcinoma at Dr. Hasan Sadikin General Hospital Bandung, West Java,

Indonesia from 2015 to 2019. This study recruited histologically confirmed prostate carcinoma patients registered in the outpatient clinic of Dr. Hasan Sadikin General Hospital from January 2015 to December 2019. Patients with incomplete data were excluded from this study. All data were collected with the total sampling approach. Variables collected in the study were Age, Blood Pressure, Smoking History, Body Mass Index, Prostate Morphology, ISUP and Gleason Scores, Cancer Staging, Cancer Stadium, Cancer metastasis, and Treatment Received. Statistical analyses were performed using the IBM’s SPSS Statistics ver. 23.0 (IBM Co., Armonk, NY, USA).

Results

One hundred and five prostate carcinoma patients came to the urology clinic and met the inclusion and exclusion criteria during the 2015–2019 period. There were 22 cases (19.5%), 19 cases (16.8%), 35 cases (31.0%), 12 cases (10.6%), and 5 cases (13.2%), respectively, for 2015, 2016, 2017, 2018, and 2019 as shown in Table 1. The largest age group was the 60–69 years group (n=52, 46.0%) patients). Of all prostate carcinoma patients in the study, 92 (81.4%) also had hypertension, 62 (54.9%), and 8 (70.8%) had normal body mass index, as listed in Table 2.

Most patients had 20–40 cc prostate volume range (n=47, 41.6%), hard consistency prostate (n=70, 61.9%), and without nodules (n=65, 57.5%) as described in Table 3.

Most patients had a PSA level of > 20 ng/mL (n=83, 73.5%) as shown in Table 4. Table 5 presented the Gleason score of 38 prostate carcinoma patients in this study, with most had 8 (4+4),(3+5),(5+3), and were in stadium 4 in ISUP score.

Based on table 6, as many as 59 (52.2%) patients suffered from stage IV prostate carcinoma, while 96 (85.0%) patients did not

Table 1 Incidence of Prostate Carcinoma in 2015–2019

Year	Total (n)	Percentage (%)
2015	22	19.5
2016	19	16.8
2017	35	31.0
2018	25	22.1
2019	12	10.6

Table 2 Characteristics of Prostate Carcinoma Patients

Characteristic	Total (n)	Percentage (%)
Age (years)	67.95±8.946	
50-59	18	15.9
60-69	52	46.0
70-79	32	28.3
80-89	10	8.8
≥90	1	0.9
Blood Pressure		
Normotensive	21	18.6
Hypertension	92	81.4
Smoking		
Yes	51	45.1
No	62	54.9
Body Mass Index		
Underweight (<18.50)	13	11.5
Normal (18.50-24.99)	80	70.8
Overweight (25-29.99)	19	16.8
Obese (≥30)	1	0.9

Table 3 Distribution of Prostate Carcinoma Patients by Prostate Morphology

Prostate Morphology	Total (n)	Percentage (%)
Volume (cc)		
<20	19	16.8
20-40	47	41.6
40-60	32	28.3
>60	15	13.3
Consistency		
Soft	42	37.2
Hard	70	61.9
Nodul		
Present	48	42.5
None	65	57.5

Table 4 Distribution of Prostate Cancer Patients by PSA level

PSA Level	Total (n)	Percentage (%)
≤ 10	15	13.3
11-20	15	13.3
>20	83	73.5
Mean PSA	504.66 ± 10.26	

experience metastases.

Radical prostatectomy, which is the most commonly performed procedures for prostate carcinoma patients, was performed in 40 (35.3%) patients, followed by active surveillance in 29 (25.6%) patients, watchful waiting in 21 (18.5%) patients, TRUP in 13 (11.5%), and radiotherapy 10 (8.8%) patients, as described in Table 7.

Discussion

In this study, 105 prostate carcinoma patients were recruited. The largest age group was the 60-69 years (46.0%) group with an average age of 67.95±8.946. This result is similar to the research of Solang et al., who found that the most prostate carcinoma cases are found in the age group of 61-70 years in their study (n=20, 37.0%).⁸ This is also in line with the finding of Siregar's research, which showed that the most patients in their study were in the age group of 61-70 years (25.3% of 194 total samples), and Zendrato's study, also showing that most patients with prostate cancer was 61-70 years old (48.9% of 45 total samples).^{9,10} Various literature references stated that prostate cancer is rare among adults <50 years of age.¹¹ The risk of being diagnosed with prostate carcinoma is

Table 5 Distribution of Prostate Cancer Patient by Gleason Score

ISUP Score		Total (n)	Percentage (%)
1	2-6	11	9.7
2	7 (3+4)	10	8.8
3	7 (4+3)	17	15.0
4	8(4+4). (3+5). (5+3)	40	35.3
5	9-10	35	31.0

Table 6 Distribution of Prostate Cancer Patients by Staging and Metastasis

Staging	Stadium	Total (n)	Percentage (%)
T1aN0M0G1	I	2	1.8
T1aN0M0G2,G3-4		8	7.1
T1b,cN0M0	II	7	6.2
T1T2N0M0		19	16.8
T3N0M0S	III	7	6.2
T4N0M0		11	9.7
T1-4N1M0	IV	8	7.1
T1-4NM1		51	45.1
Unknown	-	0	
Metastasis			
Yes		59	52.2
No		54	47.8

closely related to the age factor. The risk for men aged over 50 years is almost seven times higher than that of men aged 50–59 years, and the risk of death also increases to 21 times higher. However, sudden death caused by prostate carcinoma is more likely to occur in men diagnosed with prostate carcinoma in their 50s.¹²

Many studies have investigated and looked into other factors, such as age, physical status, psychiatric factors, lifestyle, socioeconomic status, and metabolic factors associated with prostate carcinoma. In a study conducted by Hwang et al., the categories of hypertension, diabetes, and dyslipidemia were included as risk factors with 92 (81.4%) prostate carcinoma

patients also had hypertension, 62 (54.9%) patients did not smoke, and 80 (70.8%) patients had normal body mass index.^{13,14}

The present study demonstrated that the highest distribution of prostate carcinoma based on PSA was at PSA levels >20 ng/mL by 83 patients (73.5%), and the lowest was <10 ng/mL by 14 patients (12.4%). This result is consistent with a study conducted by Erlangga which found that the highest frequency of prostate cancer had a PSA value > 10 ng/mL (65.9%).¹⁵ Lubis and Danarto also found that the highest prostate cancer frequency had a PSA value >10 ng/mL (87.9%).¹⁶ Based on this study, a PSA level with a threshold value of 4 ng/mL has a sensitivity >90% and a specificity <25%, whereas when the threshold value is 10 ng/mL, the specificity increases twice. This is in line with the theory stating that the increased production of PSA indicates an increase in excess metabolism in the prostate, which leads to malignancy. Thus, PSA level can be used for early detection of prostate cancer.¹⁵ An increase in the PSA level of >100 ng/mL before therapy is a crucial indicator of metastasis with a positive

Tabel 7 Distribution of Prostate Cancer Patients by Treatment

Treatment	Total (n)	Percentage (%)
Radioterapi	10	8.8
Radikal Prostatektomi	40	35.3
ADT	63	55.9

predictive value of 100%. Thus, it is necessary to carry out further examinations in the form of plain bone radiographs, CT, or MRI.¹⁶ In one study, it was found that the mean PSA levels in developed countries were lower, such as in Japan and South Korea, and are between 15-51 ng/mL. Meanwhile, the PSA levels in developing countries varies between 75 to 373 ng/mL.¹⁷

Most patients in the study have a Gleason score of 8-10 or poorly differentiated (n=75, 66.3%). The Gleason score is currently the most widely used method in the world to determine the histopathological degree of prostate carcinoma. However, there are still many differences in studies regarding the relationship between the Gleason score and patient's age at the time of prostate carcinoma diagnosis. Zhou et al.'s study found that among African-Americans, there is a tendency of increased Gleason scores in older men but this phenomenon is not seen in Caucasians. Interestingly, they also found that those under 50 years of age are equally likely to have high Gleason scores in both races.¹⁸ An anatomical pathology laboratory in West Sumatra found that the distribution of all Gleason scores was the same in patients who are <50 years of age, with the 51-60 year age group as the most well-differentiated (42.86%), while the 61-70 years, 71-80 age group years and 81-90 years are mostly poorly differentiated (46.03%, 50%, and 62.50% respectively).¹⁹

Based on table 4.6, 59 (52.2%) patients had stage IV prostate carcinoma and 54 (47.8%) patients did not experience metastases. The pathogenesis of prostate cancer metastases to bone is due to a venous plexus called the Batson plexus. Venous blood flow from the prostate will flow to the vertebral column and pelvis through the Batson plexus so that the spread of prostate cancer is observed in the vertebrae, especially at the lumbar and pelvic bones. Staging is one of the bases in considering the type of treatment and prognosis of the patient, along with the Gleason score and PSA score.^{12,20}

The most commonly performed procedures for prostate carcinoma patients in this study population were radical prostatectomy, which was performed in 40 (35.3%) patients, followed by active surveillance (n=29, 25.6%) patients, watchful waiting (n=21, 18.5%), TRUP (n=13, 11.5%) and radiotherapy (n=10, 8.8%) patients. Radical prostatectomy is the primary curative therapy in localized prostate carcinoma. Umbas et al. suggested that hormonal therapy and TURP are still the therapeutic modalities most often chosen by urologists in Indonesia because the

most patients who are presented in health care facilities in Indonesia are already at an advanced stage.¹⁷

To conclude, this study demonstrates that most prostate cancer patients are in the 60-69 year age group. There were 62 patients with prostate carcinoma who did not have a smoking history. The highest volume range most frequently observed among these patients is 20-40cc with hard consistency without nodule, while the highest PSA value is >20 ng/mL. The highest Gleason score in this study is 8-10 (poorly differentiated). Lastly, the most commonly performed procedure for prostate carcinoma patients is radical prostatectomy, which was performed in 40 (35.3%) patients.

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