ORIGINAL ARTICLE

High Incidence of Advanced Stage Prostate Cancer in Riau Province of Indonesia

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ABSTRACT

Introduction: Indonesia is in the fifth position of the most prostate cancer incidence countries in Asia with the rate of 10.6 per 100.000 cases from all group of age and the mortality rate is about 8 per 100.000 cases. The objective of this study is to identify the characteristics of advanced stage prostate cancer patients.

Materials and Methods: We reviewed the medical records of 42 advanced stage prostate cancer men of all 103 prostate cancer men in Arifin Achmad Regional General Hospital Pekanbaru Riau Province, Indonesia, from January 2010 to December 2016.

Results: There were 103 adenocarcinoma of prostate patients from January 2010 to December 2016 consisting of 61 (59.2%) initial staging and 42 (40.8%) advanced stage prostate cancer patients in which included in this study. Most (40.5%) advanced stage prostate cancer patients were 61-70 years old. Most (88.1%) abnormal finding were found in digital rectal examination (DRE). Most (28.6%) patients had 61-80 ml prostate volume with Transrectal Ultrasound (TRUS). Most (47.6%) patients had initial Prostate Specific Antigen (PSA) >100 ng/ml with Gleason Score were mostly (81%) poorly differentiated. The bone scan results showed that 30 patients (71.4%) were positive for metastasis. The treatment with Androgen Deprivation Therapy (ADT) show the highest modality (78.6%).

Conclusions: We found high incidence of advanced prostate cancers with high ages, high abnormality in DRE, high prostate volumes with TRUS, high PSA levels, high poorly differentiated adenocarsinomas, high Gleason Scores, high metastasis in bone scans and high treatment with ADTs.

Keywords: Prostate cancer, Prostate Spesific Antigen, Digital Rectal Examination, Bone scan, Androgen, Deprivative Therapy

INTRODUCTION

Prostate cancer is the fourth most found case of malignancy on male after skin, lung, and colon cancers. [1,2] In 2012 there were 1,1 million cases diagnosed as prostate cancer in the world, with the highest incidence in Australia, New Zealand and North America (97,2 per 100.000).[1] The number of new case and death caused by prostate cancer are rising as the increasing number of elderly people. According to the data of 2009-2013 in the United State, the number of new prostate cancer are about 129,4 per 100.000 civilian and the mortality rate are 20.7 per 100.000 civilian each year.[3] In European countries, prostate cancer is more likely suffered people at the age of 70 years old. Mostly prostate cancer incidence in Asia is lesser than the ones in industrial countries, but it seems to be showing some sign of increase.[1] The last data from Asia shows that there was an increasing trend of prostate cancer incidence in several countries such as China, Japan, Philipines, Singapore, South Korea and Thailand compared to other high risk country (such as America and Europe).[4]

Indonesia is in the fifth position of the most prostate cancer incidence country in Asia, with the rate of 10.6 per 100.000 case from all group of age and the mortality rate is about 8 per 100.000. The prevalence of prostate cancer in Indonesia in 2013 were 0.2% or estimated 25.012 patients.[5] Prostate cancers likely occur on male at the age of above 50 years and it's occurrence will increase as the person grow older.[6,7] Other than the age factor, the risk of getting prostate cancer will rise with the history of family members having prostate cancer.[8] Prostate Specific Antigen (PSA) test can be used to predict prostate cancer and the risk of long term metastasis.[9]

Transrectal Ultrasound (TRUS) can be used to find nodules on prostate malignancy and to determine the

volume size of prostate.[10] Skeletal imaging examination such as bone scan which has the role of supporting diagnostic tool are more often used as an optimal method in evaluating the occurance of bone metastasis.[11]

Prostate cancer in early stage is almost always symptom-less so that there will be more likely found patient with advanced stage.[12] Especially in Asian countries, the rate of finding prostate cancer in advanced stadium are relatively higher than in USA and Europe, in which many of the cases did not do early screening.[4,5] According to a study by Umbas (2011), it was reported that there were many advanced stage prostate cancer patients coming to the urology clinic, which was 50% (207 persons) of them were high grade and 66.7% patients (257 persons) are in stages four.[6] The data from Global Burden Of Cancer Study (GLOBOCAN) data in 2012 showed that the death case from prostate cancer (307.000 cases) were much lower than the newly found cases (1.1 million cases), so it could be concluded that if those cases were detected and handled early the prognosis would be better.[1,3]

According to the above data, we are interested to know how the characteristic of advanced stage prostate cancer that were being managed in Pekanbaru Riau Province Indonesia by looking in several variable such as age, digital rectal examination findings, PSA level, prostate volume, histopatology with Gleason Score and Grading, bone scan and the type of therapy given.

METHODOLOGY

This research is a descriptive epidemiological study with cross sectional design. The data were collected from medical records of Arifin Achmad Regional General Hospital Pekanbaru Riau Province Indonesia for 7 years in January 2010 until December 2016. The data collected consisted of age, digital rectal examination findings, PSA level, , prostate volume measurement using by Transrectal Ultrasonography (TRUS), histopathology with Gleason Score and grading, bone scan and the therapy. The sampling technique was total sampling fulfilled the inclusion criteria. Inclusion criteria were all advanced stage of prostate cancer according to the American Joint Committee on Cancer, and the histopathological findings from prostate biopsy and Transurethral Resection of Prostate (TURP).

RESULTS

There were 103 adenocarcinoma of prostate consisting of 61 (59.2%) initial staging and 42 (40.8%) advanced stage prostate cancer patients included in this study.

Table 1 shows the advanced stage prostate cancer patients were mostly (40.47%) found in the group age of 61-70 years old meanwhile the least (2.38%) are found in group age of 41-50 years old. The abnormal digital rectal examination findings were 88.10%. Prostate volume 61-80 ml were mostly (28.07%) found and PSA >100 ng/ml were mostly (47.6%) found. The histopathological Gleason Score (7-10) with poorly differentiated grade were mostly (80.96%) found, and the least (7.14%) were the Gleason Score 2-4 with well differentiated grade. The result of bone scan on the advanced stage prostate cancer patients are mostly 71,43% found with metastasis. The type of therapy used on those Advanced stage Prostate cancer patient are mostly (78,57%) Androgen Deprivation Therapy (ADT) and radiotherapy in 21,43.

Table 1. Characteristic of advanced stage prostate cancer patients (n=42)

Characteristics	Cases (%)
Age (years)	
41-50	1 (2.38)
51-60	14 (33.3)
61-70	17 (40.47)
71-80	7 (16.71)
81-90	3 (7.14)
Rectal Toucher	
Normal	5 (11.9)
Abnormal	37 (88.1)
Prostate Volume	
<20 ml	5 (11.9)
20-40ml	5 (11.9)
41-60 ml	9 (21.43)
61-80 ml	12 (28.57)
81-100 ml	7 (16.08)
>100 ml	4 (10.12)
Gleason Score (Grade)	
2-4 (well differentiated)	3 (7.14)
5-6 (moderately differentiated)	5 (11.9)
7-10 (poorly differentiated)	34 (80.96)
PSA level	
≤4	4 (10.12)
4,01-10	4 (10.12)
10,1-20	4 (10.12)
20,1-50	6 (14.28)
50,1-100	4 (10.12)
>100	20 (47.6)
Bone Scan	
No Metastastic	12 (28.57)
Metastatic	30 (71.43)
Therapy	
Androgen Deprivation Therapy (ADT)	33 (78.57)
ADT with radiotherapy	9 (21.43)

DISCUSSIONS

Prostate cancer usually attacks male with the age of 50 or above but it is symptomless. This statement suits the result of this study in which it is acquired

that the advanced stage prostate cancer patient is mostly in the group age of 61-70 years old about 17 patients (40,47%) and the least are in the group age of 41-50 years or 1 patients (2,38%). The result of this study are the same as the one found by Glady et al (2015) in Hasan Sadikin's Hospital Bandung Indonesia in which the most prostate cancer found were in 61-70 years old, 48% (75 patients) out of 156 patients in overall clinical stadium.[14]

Abnormal DRE findings are one of the indication for prostate biopsy needed to determine the diagnosis prostate cancer. In this study, the result of the DRE on those advanced stage prostate cancer as patients mostly abnormal findings namely 37 patients (88,10%). Other study by Palmeora et al (2012) had the same result in which the cohort study of 306 prostate cancer patients, 44% (293 patients) of them had abnormal DRE findings but 31% (167 patients) were normal.[15] Some studies reported that DRE was an ineffective screening method, so that the result of those examination were still in controversy. Those studies showed abnormal DRE sensitivity which was only 44% and the specificity of 46% with 46% negative predictive value and 46% positive predictive value in detecting prostate cancer [15]. A study done by Wilbur (2008) also found only 25% prostate cancers detected with biopsy after the abnormal findings by palpating in the suspicious area of the prostate.[16]

Prostate cancer patients with the prostate volume of 44 ml or more has the risk of developing a high degree tumor, extension out of the capsule, vesicula seminalis invasion and smaller tumor volume.[17] The result of this study shows that the prostate volume of advanced stage prostate cancer patients with TRUS mostly shows 61-80 ml group in 12 patients (28,57%) and the least are on the >100 ml group in 4 patients (10,12%). This result is different from the study done by Umbas et al (2010) that showed prostate gland with smaller volume tended to be more aggressive but the bigger one were not. According to their result of measuring the prostate volume in prostate cancer patients were mostly on the range of 20-40 ml in 47 patient (57,2%), in which 21 cases among them are in poorly differentiated of malignancy. [17]

PSA is an important sign in diagnosis, follow up, and to determine the prognosis of prostate cancer. The result of this study shows the PSA level on advanced stadium prostate cancer patients mostly are the group of >100 ng/ml namely 20 patients (47,6%). The same result published by Umbas et al (2011) showed 190 advanced stadium prostate cancers with the PSA level of more than 100 ng/ml were 66,55% from all prostate cancer in Cipto Mangunkusuma Hospital (RSCM) Jakarta and Jakarta's Darmais Cancer Hospital in January 1995 until December 2007 [18]. Beside being an important sign on diagnosis, PSA follow up can also be rolled as marker of prostate cancer progressivity such as if there is a possibility of bone metastasis seen from patient clinically. Such as in a study done by Park et al (2011), there were found metastasis on patient with PSA level > 50 ng /ml.[19]

Nowadays, gleason grading system is the most common classification used that helps to determine the histologic characteristics of prostate cancer. Prostate cancer patients with Gleason Score above 6 are likely to progress become advanced stage, as are patient with PSA value >10 ng/ml or higher.[20]. In this study we found the grading of histopathology on the advanced stadium prostate cancer patients are mostly poorly differentiated (Gleason Score: 7-10) namely 34 patients (80.96%) and the least are well differentiated (Gleason Score: 2-4) about 3 patients (7.14%). These result were similar to the ones by Adam et al (2010) which found the degree of histopathology of advanced stadium prostate cancer with mostly poorly differentianted namely 21 patient (44.7%) from 47 patient samples [21].

The diagnostic standard on bone metastasis which are commonly used nowadays are the bone scan with 99mTc methylene diphosponate (MDP). This study finds the bone scan results on the advanced stadium prostate cancer patients mostly shows metastasis which namely 30 patients (71.43%). This result suits the results with the one done in China by Dalin et al (2016) in which from 407 advanced stadium prostate cancer patients showed 340 patients (83.5%) had bone metastasis [22]. Other study done by Poussel et al (2006) showed most bone metastasis in 17 patients (68%) of 25 advanced stadium prostate cancer patients[23].

Androgen Deprivation Therapy (ADT) is a first line standard therapy for advanced stadium prostate cancer patient that commonly used today. The result of this study showed the type of therapy used to treat advanced stadium prostate cancer is ADT in 33 patients (78,57%). The same result gained by Lawrenson et al (2015) in a study on 234 prostate cancer with metastasis patients. The ADT therapies were mostly used in 105 patient (82.9%) followed by radiotherapies in 104 patients (44.4%).[24]

CONCLUSION

We found high incidence of advanced prostate cancers with high ages, high abnormality in DRE, high prostate volumes with TRUS, high PSA levels, high poorly differentiated adenocarsinomas, high Gleason Scores, high metastasis in bone scans and high treatment with ADTs.

Conflict of Interest: The authors have nothing to disclose.

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