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Characteristics of Non-Muscle Invasive Bladder Cancer (NMIBC) in Patients Treated in an Indonesian Tertiary Hospital from 2008 to 2019

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Abstract

Bladder cancer is the 10th most common cancer in both males and females with a ratio of 3:1. About 75% of bladder cancers are non-muscle invasive bladder cancers (NMIBC). The aim of this study was to identify the characteristics of Non-Muscle Invasive Bladder Cancer (NMIBC) patients treated in Dr. Hasan Sadikin General Hospital as one of the tertiary hospitals in Indonesia. This was a retrospective descriptive study that involved reviewing the medical records of patients diagnosed with NMIBC between January 2008 and December 2019. Characteristics reviewed were age, gender, body mass index (BMI), smoking history, urinary tract infection and stone history, intravesical chemotherapy and its side effects, and urinary cytology results. All data were tabulated and charted. Fifty-one out of 773 bladder cancer patients were diagnosed with NMIBC (6.59%). The mean age was 62.94 years old, with the majority of patients were in the 60-69 age group (31.37%). Males constituted the majority of the patients (n=44, 86.27%), with most patients had ideal BMI (66.66%), smoking history (72.54%), urinary tract infection history (56,86%), and urolithiasis history (5.88%). Thirty patients were given intravesical chemotherapy (58.82%), three patients experienced hematuria (10%), and four patients had painful urination (13.33%). Urinary cytology showed atypical cells (92.16%) in the majority of patients. The incidence of NMIBC in bladder cancer patients in our study was 6.59%, which differs from the incidence in developed countries of 75%, as shown in previous literature.

Keywords: Non-muscle invasive bladder cancer, NMIBC, patient characteristics

Introduction

Approximately 549,393 cases of bladder cancer were reported in 2018. Bladder cancer is the 10th most common cancer in both males and females with a ratio = 3:1. For the male population, bladder cancer is the seventh most common cancer in the world. Bladder cancer prevalence was recorded at 3.2 per 100.000 cases and increased 15% per year in the last decade.[1-3] Bladder cancer is more commonly found in developed countries, with a 60% incidence in the male population with a male-to-femaleratio of 3.5:1.[1] About 75% of bladder cancer is a non-muscle invasive bladder cancer (NMIBC). NMIBC is limited to the mucosal layer or Ta stadium (carcinoma in situ) or the submucosal layer (T1).[4] In Indonesia, the incidence of bladder cancer has reached ~15% annually in the last decade and the data from two of the tertiary hospital in Indonesia (Cipto Mangunkusumo Hospital and Soetomo Hospital) showed that more patients were diagnosed with muscle-invasive bladder cancer (72,9%) than with NMIBC (27,1%). This delay in diagnosis may be due to the lack of public knowledge about this cancer and the tendency of people to seek alternative traditional medicine such as herbs instead of seeking professional medical treatment. It is estimated that there are 165.000 deaths caused by bladder cancer globally.[5-7] To date, data on NMIBC in Indonesia is minimal. Therefore, This study aims to show NMIBC patients' characteristics in Dr. Hasan Sadikin Hospital as a top referral hospital in West Java, Indonesia.

Methods

This retrospective descriptive study aims to review the characteristics of patients diagnosed with non-muscular invasive bladder cancer using a total sampling method by assessing medical records. In Dr. Hasan Sadikin General Hospital,

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Indonesia, there were 51 patients diagnosed with non-muscular invasive bladder cancer out of 773 bladder cancer patients that were treated between January 2008 to December 2019. The patient characteristics studied were age, gender, history of smoking, history of urinary tract infection, history of urinary tract stones, the instillation of intravesical chemotherapy, one year follow up and urinary cytology examination results. The inclusion criteria is an outpatient clinic that has a complete medical record. The exclusion criteria is a patient who didn't have an incomplete medical record. Data were then tabulated for analyses using SPSS version 24.0 for the Windows program. Ethical clearance was obtained before the study, given by the Health Research Ethics Committee of Dr. Hasan Sadikin General Hospital Bandung with register number: LB.02.01/X.6.5/23/2019.

Results

Between 2008–2019, 773 patients were diagnosed with bladder cancer and were treated in Dr. Hasan Sadikin General Hospital Bandung, Indonesia. Out of 773 patients, 51 patients (6.6%) were diagnosed with NMIBC. All patients' characteristics are presented in Table.

Urinary cytology results showed four patients with urothelial bladder cancer (8%) and 47 with atypical cells (92%). After one year of follow-up, one NMIBC patient progressed to muscle-invasive bladder cancer.

Table Patient Characteristics of NIMBC Patients

Variables	n (%)
Age (years)	
30–39	5 (10%)
40–49	5 (10%)
50–59	10 (20%)
60–69	16 (31%)
70–79	9 (18%)
80–89	6 (11%)
Gender	
Male	44 (86%)
Female	7 (14%)
Body mass index	
Underweight	3 (6%)
Normal	34 (67%)
Overweight	14 (27%)
Smoking History	
Yes	37 (72%)
No	14 (28%)
Urinary tract infection history	
Yes	29 (57%)
No	22 (43%)
Urinary tract stone history	
Yes	3 (6%)
No	48 (94%)
Intravesical Chemotherapy	
Receive	30 (58%)
Did not receive	21 (42%)
Intravesical chemotherapy side effects	
Hematuria	3 (10%)
Painful urination	4 (13%)
No complaints	23 (77%)
Urinary cytology	
Urothelial bladder cancer	4 (8%)
Atypical cells	47 (92%)

Discussion

Worldwide, the bladder cancer (BC) age-standardized mortality rate (per 100,000 people/year) was 3.2 for men vs. 0.9 for women in 2012.[8] Bladder cancer incidence and mortality rates vary across countries due to differences in risk factors, detection, and diagnostic practices, and treatment availability. However, the variations are partly caused by the different methodologies used and the quality of data collection.[6] BC's incidence and mortality have decreased in some registries, possibly reflecting the reduced impact of causative agents.[9]

Approximately 75% of patients with BC present with a disease confined to the mucosa (stage Ta, CIS) or submucosa (stage T1); in younger patients (<40), this percentage is even higher.[10] Patients with TaT1 and CIS have a high prevalence due to long-term survival in

many cases and a lower risk of cancer-specific mortality compared to T2-4 tumors.[6, 8] During the study period, 773 bladder cancer patients were treated in Dr. Hasan Sadikin General Hospital in Bandung, West Java. Around 6.59% of patients were diagnosed with NMIBC. As shown in table 1, NMIBC patients were mostly older people aged 60–69. Furthermore, NMIBC patients were mainly men, following the global prevalence report on bladder cancer that reported male to female ratio of 3.5:1.[1]

Tobacco smoking is the most crucial risk factor for BC, accounting for approximately 50% of cases.[6, 9-11] Environmental exposure to tobacco smoke is also associated with an increased risk for BC. Tobacco smoke contains aromatic amines and polycyclic aromatic hydrocarbons, which are excreted by kidneys.[12] A study by Bosschieter et al.[13] also explained that smoking is one of the significant risk factors for bladder cancer. A previous study showed similarity to our research, which showed 72.5% of NMIBC patients had a smoking history. Smoking is one of the most prominent factors of bladder cancer.

The European Association of Urology (EAU) guidelines strongly recommended immediate intravesical chemotherapy following TURBT for all localized bladder cancers for the low and intermediate-risk group of bladder cancers. EAU also reported four meta-analyses participated by 3103 patients showing that immediate Single Instillation (SI) is associated with lower recurrence rate compared to TURB alone and lower 5-year recurrence rate from 59% to 45%. Another study reported that administration of SI within 24 hours following TURB may implant further tumor cell implantation.[4] In this study, 58.8% of patients were given instillation intravesical chemotherapy after complete TURBT. The observed side effects of intravesical chemotherapy's instillation were minimal: hematuria (10%) and painful urination (13.3%). A study by Jarvinen et al.[14] also reported minimum side effects of intravesical chemotherapy instillation.

This study is not without limitations. It was a retrospective evaluation. It can be challenging to make accurate comparisons between the exposed and the non-exposed. This study cannot make an outcome assessment and instead must rely on others for accurate recordkeeping.

Non-muscle invasive bladder cancer cases in our hospital, only 5.6%. It was less than muscle-invasive bladder cancer, while data from developed countries showed NMIBC accounted for 75% of bladder cancer. The dissimilarity in the data is because most of the patients who came to our hospital were at an advanced stage of bladder cancer. The dissimilarity in the data is because most of the patients who came to our hospital were at an advanced stage of bladder cancer. The most common clinical feature findings in our study were male gender with an age range between 50–59 years old, smoking history, and clinical evidence of urinary tract infection. Most patients received intravesical chemotherapy with no side effects reported. Urinary cytology result is atypical cell features. The importance of knowing the characteristics of patients with NMIBC increases sources of information and awareness to the public about the typical characteristics of patients with NMIBC.

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