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Original Article

Prostate cancer in young adults—Seventeen-year clinical experience of a single center

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Abstract

Background: In the general population, prostate adenocarcinoma affects predominately older men. If fact, most current guidelines suggest that males over the age of 50 years should undergo prostate cancer screening. However, the clinical behavior and prognosis of prostate cancer in young adults is not well defined. The aim of this study was to evaluate the clinical behavior, pathological characteristics, and prognosis of prostate cancer in young adults.

Methods: We retrospectively reviewed the records of young patients (age, ≤50 years) in our hospital with prostate adenocarcinoma between 1997 and 2013. We compared data including initial presentation, cancer cell type, Gleason score, disease stage, prostate-specific antigen (PSA) level, prostate volume, treatment, and survival between patients both younger and older than 50 years. Data were analyzed using the Kaplan–Meier method to assess survival.

Results: Twenty-six patients were enrolled in our study, accounting for 0.55% of all patients with a diagnosis of prostate cancer at our facility. All 26 patients had a pathology diagnosis of adenocarcinoma, with a mean age on diagnosis of 46.8 ± 2.8 years (range, 39–50 years). On initial presentation, patients older than 50 years more frequently displayed lower urinary tract symptoms (LUTS) than younger patients (62.3% vs. 30.4%, $p = 0.008$). There was no statistical difference in histological grade, disease stage, PSA level, overall survival, and biochemical-free survival between the two groups.

Conclusion: The result of our investigation indicated that prostate adenocarcinoma patients younger than 50 years had similar histological grade, disease stage, PSA level, overall survival, and biochemical-free survival as the older population. However, patients younger than 50 years with prostate cancer less frequently showed initial symptoms of LUTS.

Keywords: prognosis; prostate cancer; young adults

1. Introduction

Prostate adenocarcinoma is a condition that primarily affects older men. Males younger than 50 years account for approximately 1% of all patients diagnosed with prostate adenocarcinoma.[1] The current literature suggests that clinical characteristics and prognosis of prostate cancer in young adults are conflicting and remain unresolved. Some observers

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had suggested than young age is a poor prognostic indicator.[2,3] Several studies reported a better survival outcome in men younger than 50 years of age.[4,5] However, others have revealed no significant difference in disease recurrence, histological grade, and disease stage.[6–9] We retrospectively evaluated the clinical behavior, pathological characteristics and prognosis of prostate cancer in men younger than 50 years of age.

2. Methods

We retrospectively reviewed the Taipei Veterans General Hospital cancer registry, examining the charts of patients with prostate cancer between January 1997 and December 2013 whose age at diagnosis was younger than 50 years. All patients who were diagnosed or treated at our hospital were included in this study.

Demographic data, symptoms at initial presentation, histological grade, clinical or pathological stage, initial prostate-specific antigen (PSA) level on diagnosis, prostate volume on transrectal ultrasound, treatment, and clinical outcome were all recorded. Patients with nonadenocarcinoma condition or inadequate medical records data were excluded. For disease stage analysis, pathological stage was used when available; otherwise, clinical stage was used. The disease stage was assessed according to the AJCC (American Joint Committee on Cancer) (2010) tumor–node–metastasis system. Histological grade was defined as Gleason score in the following manner: low grade (score 2–5), intermediate grade (score 6–7), and high grade (score 8–10). Symptoms on initial presentation were categorized into seven groups as follows: lower urinary tract symptoms (LUTS), incidental finding, bone pain, hematuria, dysuria, acute urinary retention, and others. The LUTS consisted of a feeling of incomplete bladder emptying, frequency, intermittency, urgency, weak stream, straining, and nocturia. Patients who survived without evidence of disease, or who were lost to follow-up, were censored. Survival was defined as the time from initial presentation to the study end point, including death or censoring.

A patient group comprising study participants older than 50 years was selected for comparison with the younger patients. There were 106 patients randomly selected with a confidence level of 95% and a confidence interval of 9.4%.

Differences in the distribution of demographic, clinical, and pathological variables, such as symptoms of presentation, PSA level, D'Amico risk classification, and disease stage, between younger and older men were evaluated using Fisher's exact test. The difference of prostate volume was assessed by use of the t test. Survival curves were plotted using the Kaplan–Meier method, with statistical significance calculated according to the log-rank test. Data were analyzed using IBM SPSS Statistics 20.0 (IBM, Armonk, NY, USA). A p value < 0.05 was considered statistically significant.

We informed the patients about the study, and consent was obtained from each patient.

3. Results

A total of 4716 patients were diagnosed with prostate cancer in the 17-year period, and 29 patients were younger than 50 years of age. Of 29 prostate cancer cases identified, 26 had pathological diagnosis of adenocarcinoma, which accounted for 0.55% of all patients. The other three had the pathological diagnosis including embryonal rhabdomyosarcoma and stromal sarcoma. The mean age of the patients at initial diagnosis was 46.8 ± 2.8 years (range, 39–50 years). The median follow-up duration was 79.6 months (range, 4.5–198.2 months). The average prostate volume on transrectal ultrasound was 29.33 ± 10.0 mL. Nine patients were positive and eight were negative on digital rectal examination. The most common presenting symptoms were incidental findings in nine patients (38%), LUTS in seven (29%), bone pain in three (13%), and hematuria in three (13%) (Table 1). Additionally, six of 26 patients (23%) had a family history of prostate cancer in our study group.

Of those 26 patients, cancer staging was as follows: Stage I ($n = 0$, 0%), Stage II ($n = 14$, 56%), Stage III ($n = 4$, 16%),

Table 1
Characteristics and univariant analysis of the patients with prostate cancer.

	Age ≤ 50 y	Age > 50 y	p
Patients (n)	26	108	
Age (y)	47.0 ± 2.7	75.13 ± 8.1	
DRE			
Positive	8 (47%)	43 (62%)	0.191
Negative	9 (53%)	26 (38%)	
TRUS prostate volume (mL)	29.33 ± 10.0	37.10 ± 17.9	0.122
PSA (ng/mL)			0.847
<4	0 (0%)	5 (6%)	
4–10	7 (32%)	25 (32%)	
10–20	5 (23%)	18 (23%)	
>20	10 (45%)	30 (39%)	
Initial presentation			0.011
LUTS	7 (29%)	50 (63%)	
Incidental finding	9 (38%)	10 (13%)	
Bone pain	3 (13%)	3 (4%)	
Hematuria	3 (13%)	5 (6%)	
Dysuria	2 (7%)	3 (4%)	
AUR	0 (0%)	5 (6%)	
Others	0 (0%)	3 (4%)	
Stage			0.652
I	0 (0%)	5 (6%)	
II	14 (56%)	38 (48%)	
III	4 (16%)	13 (17%)	
IV	7 (28%)	23 (29%)	
Risk classification[a]			0.678
Low	2 (12%)	17 (22%)	
Intermediate	7 (44%)	29 (37%)	
High	7 (44%)	33 (42%)	
Treatment[b]			0.001
Surgery	13 (59%)	14 (18%)	
Nonsurgery	9 (41%)	62 (82%)	

AUR = acute urinary retention; DRE = digital rectal examination; LUTS = lower urinary tract symptoms; PSA = prostate-specific antigen; TRUS = tracsrectal ultrasound.

[a] According to D'amico risk classification, for localized disease or locally advanced disease. Metastatic disease not included.

[b] Nonsurgery group includes hormone deprivation therapy, radiotherapy, watchful waiting, and active surveillance.