Original Article

Histopathological diagnoses and patterns in transrectal ultrasound-guided prostatic biopsy series from a large tertiary care center in Saudi Arabia

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Abstract

Aim: The aim of the study was to report our transrectal ultrasound (TRUS)-guided prostatic biopsy histopathological diagnoses and clinical findings in our prostate cancer patients in a tertiary care center.

Methods: We have reviewed our TRUS biopsy series done in our department from January 2011 to December 2016. We reviewed our patient's prebiopsy prostate-specific antigen (PSA) findings and the histopathological diagnoses and determined the clinical and pathological features of prostate cancer patients in our series.

Results: A total of 398 patients underwent 12 core TRUS biopsies. Benign prostatatic hyperplasia was found in 48.5% of the patients and prostate cancer was found in 113 patients (28.4%). Among them, metastatic prostate cancer was found in 51.7% of them. High Gleason score (8–10) was found in 56.6% and a PSA of more than 20 was found in 63.3% of the patients.

Conclusion: We recommend a mass public awareness program to encourage our patients to seek early prostate cancer screening and to alert the medical community to encourage more awareness of prostate cancer screening.

Keywords: Gleason score, prostate biopsy, prostate cancer

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INTRODUCTION

Although prostate cancer is the second most common cancers in worldwide,[1] it is not as common in Saudi Arabia. In the United States, prostate cancer is the most common noncutaneous malignancy in men,[2] while in Saudi Arabia, it ranks sixth in men.[3] The age-standardized incidence rate was reported to be 4.5/100,000 in 2012, which is low when compared to the Western countries. AIRS for Ireland was 126.3/100,000 in the same period, 16 times higher than Saudi Arabia.[4,5] In the United States, the incidence is about 100–126/100,000 population,[6] compared to the gulf countries which is between 3.1 and 6.5/100,000 population.[7-9] This low incidence rate was attributed to the lower aging population in our country.[10] However, the incidence of prostate cancer has increased by 48% from 1994 to 2006, which makes it the top raising

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genitourinary cancer in the country during that period.[10] Prostate cancer is often found advanced at presentation in Saudi Arabia. In the Eastern region, the median prostate-specific antigen (PSA) level at diagnosis was 52 ng/L, 65% had a PSA more than 20 ng/mL, and 52% of their series had bone metastasis at presentation.[11] In another series from Madinah city, the mean PSA was 363.4 ng/mL, and 81,6% of the cancer patients had PSA level >100 ng/mL.[12] Furthermore, in another screening trial from Riyadh city, the rate of discovering an advanced disease upon diagnosis was 26.9% of confirmed cancer cases,[13] in comparison to the United states where the finding of metastatic disease is estimated at around 4%.[14] This high incidence of the advanced stage upon detection could be due to a lack of national screening program and insufficient public awareness of prostate cancer.[4,11-13]

Our aim in this study is to review a large series of transrectal ultrasound (TRUS)-guided prostate biopsy from our tertiary care center. Our primary outcome is to identify the prevalence of prostate cancer upon biopsied individuals and the stage at diagnosis. Secondary outcomes include the indication for biopsy, various histopathological patterns, the correlation of PSA level and diagnosis, and prostate cancer treatments undertaken among our patients.

METHODS

We retrospectively reviewed TRUS-guided biopsy that has been done at the Urology Department in Prince Sultan Military Medical City, Riyadh, Saudi Arabia. We collected the data for patients starting from 2011 until 2016. We have done a 12-core biopsy for all patients. All procedures have been done under local anesthesia. Prebiopsy negative urine culture has been obtained, and all patients have received prebiopsy antibiotics. We collected the patient age, various indications for biopsy, PSA level, and the digital rectal examination (DRE) findings. Histopathological diagnoses were also reviewed. Then, we have further examined the patients with prostate cancer and determined their prevalence whether localized or metastatic disease at presentation and the treatment they underwent. Data were analyzed using SPSS version 20 (SPSS Inc. Chicago, IL, USA).

RESULTS

From January 2011 to November 2016, a total of 398 biopsies have been done in our center for high PSA, abnormal DRE, or both. The mean age was 69.72 years (range: 38–102, standard deviation: 10.859).

DRE findings were normal in 108 (27.1%) and abnormal in 244 (61.3%) patients, while the remaining patients (46 patients, 11.6%) had no documentation of their DRE findings because of lack of documentation or patient refusal to undergo DRE.

PSA level was available for all patients. Ninety-two (23.1%) patients had a PSA <4 ng/mL, 148 (37.2%) of them had a PSA level between 4 and 10 ng/mL, 60 (15.1%) had a PSA level between 10 and 20 ng/mL, and 98 (24.6%) had a PSA level above 20 ng/mL.

The overall histopathological diagnosis of prostate cancer has been found in 113 (28.4%) and prostatic intraductal neoplasia in 7 patients. The most common diagnosis in our series was benign prostatic hyperplasia in 48.5% of the patients [Table 1].

Among prostate cancer patients (n = 113), 68.1% of them has a PSA level above 20 ng/mL. About 13.3% had a PSA level between 10 and 20 ng/mL, 15% had a PSA level between 4 and 10 ng/mL, and 3.5% had a PSA level below 4 ng/mL [Table 2]. DRE was abnormal in 54.5%, 13% had a normal DRE, and 32.5% refused DRE. Gleason score for prostate cancer patients was ≤6 in 18 patients, Gleason score of 7 in 31 patients, and Gleason score of 8–10 was found on 64 patients [Table 3].

Metastatic prostate cancer upon diagnosis was found in 52.2% of our prostate cancer patients. Localized prostate

Table 1: Overall histopathological diagnoses in total biopsy series

Diagnosis	Total number of patients (n=398), n (%)
Benign prostatic hyperplasia	193 (48.5)
Prostate cancer	113 (28.4)
Prostatitis	85 (21.4)
PIN	7 (1.8)

PIN: Prostatic intraductal neoplasia

Table 2: Prostate-specific antigen level among prostate cancer patients

PSA level (ng/mL)	Number of patients (n=113), n (%)
<4	4 (3.5)
4-10	17 (15)
10-20	15 (13.3)
>20	77 (68.1)

PSA: Prostate-specific antigen

Table 3: Gleason score among diagnosed prostate cancer patients

Gleason score	Number of patients (n=113), n (%)
≤6	18 (15.9)
7	31 (27.4)
8-10	64 (56.6)

cancer was found in 54 patients. Among those, 31.5% had a Gleason score of 6, 40.7% had a Gleason score of 7, and 27.8% had a Gleason score of 8–10. About 46.3% had a PSA of 20 ng/mL, 16.7% with a PSA between 10–20 ng/mL, and 37.1% had a PSA <10 ng/mL. They were managed as following: 9 (16.7%) had radical prostatectomy, 38 (70.4%) had radiotherapy with hormonal therapy, 4 (7.4%) underwent active surveillance, while 3 (5.5%) had no documentation of the treatment they have received [Figure 1].

DISCUSSION

Prostate cancer in Saudi Arabia is not as common as in the western world.[5] This might be attributed to the less aging population in the country.[10] In a study comparing the results of TRUS biopsy between the Saudi and Canadian centers, the prostate cancer prevalence was 13.6% in King Saud University Hospital (KSUH) group and 49.1% in McGill University Health Center.[15] The prevalence of prostate cancer from Madinah was 17.7%.[12] Our series had a prevalence of 28.4%, which is higher than the reported from KSUH and Madinah groups but still lower than MUHC in Canada. This might be attributed to higher patients in our series (398 patients) which is the highest reported series from Saudi center or due to dated results (2011–2016) when compared to Madinah (2006–-2013) and KSUH (pre-2013). Our population is getting more urbanized, adopting a more western lifestyle, and having a more aging population due to improving health services. This might impact the prevalence of prostate cancer in the coming decades. In fact, the diagnosis of prostate cancer is increasing and becoming more prevalent as reported by Abomelha.[10] The incidence rate was reported as 3.3/100,000 population in 2000,[9] increased to 4.5 in 2008,[5] then to 5.5 in 2010.[3]

The prevalence of metastatic prostate cancer is high in our series (52.2%). In a series from the Eastern province, the rate of metastatic disease was 52%.[11] These are high figures when compared to the Western world where the incidence is about 4% upon diagnosis.[14] This enormous difference can be attributed to the lack of screening programs in our country and the lack of public awareness about the disease. The latest Saudi Oncology Society and Saudi Urological Association combined management guidelines for prostate cancer have not included any statements regarding screening.[16] Furthermore, a recent screening trial has advised against screening in Saudi Arabia due to low incidence (0.24%) but recommended increasing public awareness and shared decision-making with patients about PSA testing.[4] The lack of public awareness is evident in our series, as there were 11.6% of our patients refused the physical examination. Furthermore, in the screening trial by Arafa *et al*., they have noticed that 17.7% of patients with high PSA have lost follow-up, and the DRE was not carried out for most of their patients as it causes embarrassment.[4]

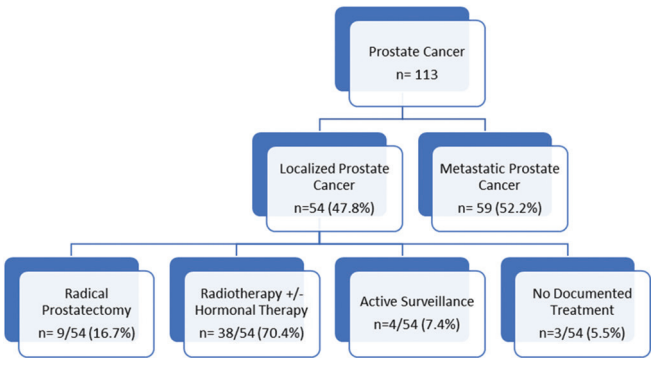

Figure 1: Algorithm of diagnosed prostate cancer patients and the treatment they have received

There is a higher prevalence of locally advanced disease in our series, as reflected by choice of radiation and hormonal therapy as the treatment modality in 70.4% of localized prostate cancer patients, along with a high prevalence of PSA level of 20 ng/mL and high prevalence of higher Gleason score (8–10), which were 63.3% and 56.6%, respectively. In the Eastern Province series, 65% of the patients had a PSA level above 20 ng/mL, which is comparable to our data. In Madinah series, PSA level <20 ng/mL was found only in 1.5% of their cancer patients and PSA level >100 ng/mL was found in 81.6%. All these figures are indicating the need for more rigorous attention to discover the disease in earlier stages.

Our study was not without limitations. Our data were retrospectively collected. Complete data were not available to all patients. Some have no documentation about their DRE, and some of our cancer patients have no documentation about the treatment they have received, possibly due to seeking treatment at another center. Our patients were from all over Saudi Arabia, but given the nature of our hospital, they were mostly from military or military families. Our center is a tertiary center and accepts oncology patients, which could have potentially increased or advanced and metastatic cases in our series.

CONCLUSION

We recommend a mass public awareness program in our country, addressing the importance of prostate cancer early detection and the importance of PSA testing and DRE. We should increase the role of primary care physicians to do early PSA testing and the importance of shared decision

making regarding prostate cancer screening with their patients. We cannot recommend a mass screening program due to the low prevalence of the disease in the country, but we should stress upon the fact that the aging population is increasing, and the prevalence of the disease is increasing, and the need for screening program might be necessary in the coming decades. We also encourage further research on prostate cancer in Saudi Arabia.

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Conflicts of interest

There are no conflicts of interest.

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