

Trends of Bladder and Prostate Cancers

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Background: Cancer is a major health problem with a significant impact on society and healthcare systems. Despite its magnitude and health burden, there has not been any study regarding the details of genitourinary cancers in Bahrain.

Objective: The aim of our study is to evaluate the incidence and histopathological trends of prostate and bladder cancers from 2014 to 2018.

Design: A Retrospective Study.

Setting: Salmaniya Medical Complex, Bahrain.

Method: Patients diagnosed with bladder and prostate cancer from 2014 to 2018 were reviewed. Data acquired included age, gender, histopathological type, TNM and staging. Further data including carcinoma in situ and WHO grading were documented for bladder cancer cases. Gleason score and pre-biopsy prostate-specific antigen level and prostate volume were documented. The age-standardized rates were calculated for each cancer type.

Result: Ninety-three (66%) were bladder cancer and 48 (34%) were prostate cancer. Most patients were diagnosed with bladder and prostate cancer at stage 1 and stage 4, respectively. Furthermore, most patients with bladder cancer had high-grade according to the WHO classification. Age-standardized rate (ASR) for bladder cancer was 21.52 and 5.69 in 100,000 for males and females, respectively, while for prostate cancer it was 14.48 in 100,000.

Conclusion: The population is young, and ASR levels are higher than other populations examined, causes and risk factors of these cancers should be subjected to further evaluation in prospective randomized trial.

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Cancer is a major health problem with a significant impact on society and healthcare systems. In 2018, approximately 18.1 million cases of cancer were diagnosed and 9.6 million deaths were documented. Urological cancers account for 12.9% of new cases recorded and 8% of deaths due to cancer worldwide¹. During 2018, the incidences of bladder, prostate, renal, testicular and penile cancer were 7.1%, 3%, 2.2%, 0.4% and 0.2%, respectively. The latest cancer incidence report in the Gulf Cooperation Council (GCC) countries shows that 164,888 cases were diagnosed between 1998 and 2012. Urological cancers comprised 9.4% of all cases with an incidence rate of 16.1% in males and 3.2% in females².

Furthermore, according to the report, 7,029 cases of cancer were diagnosed between 1998 and 2012. Bladder cancer is the most common urological cancer in Bahrain's male population with 8.6% of cases and an average annual age-standardized rate (ASR) of 15.8/100,000. It is followed by prostate cancer with 8.4% and an ASR of 15.6/100,000. Kidney cancer was 3% and ASR of 5.1/100,000 and testicular cancer was 1% of all cases and an ASR of 1/100,000³. In another study evaluating the incidence of cancer in Bahrain, 5,966 cases of cancer were diagnosed. Bladder and prostate cancers were the third and

fourth most common cancers amongst Bahraini males, with both comprising 7.8% and 7.6% of the cases and an average annual ASR of 11.7/100,000 and 11.3/100,000, respectively³.

The aim of our study is to evaluate the incidence and histopathological patterns of bladder and prostate cancers from 2014 to 2018.

METHOD

Patients diagnosed with bladder and prostate cancer from 2014 to 2018 were reviewed. The following were documented: age, gender, histological type, TNM classification and staging. Furthermore, WHO grade and presence of carcinoma-in-situ (CIS) were documented for bladder cancer cases and pre-biopsy prostate-specific antigen (PSA), prostate volume and Gleason score for prostate cancer cases. Quantitative data are expressed as mean±standard error of the mean (SEM). Statistical analysis was performed using SPSS version 23.

RESULT

Ninety-three (66%) were bladder cancer, 48 (34%) were

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Table 1: Diagnosed Cases of Urological Cancer by Year

	2014		2015		2016		2017		2018		Total
	Male	Female									
Bladder	12	6	13	4	16	1	22	5	14	0	93 (66%)
Prostate	7		7		7		14		13		48 (34%)
Total											141 (100)

Table 2: Bladder Cancer Histological Variants, TNM Staging, WHO Grade and CIS

Bladder Cancer		
Incidence and (%) (n=93)		
	2014	18 (19.4%)
	2015	17 (18.3%)
	2016	17 (18.3%)
	2017	27 (29%)
	2018	14 (15%)
Total		93 (100%)
Gender		
	Male	77 (82.8%)
	Female	16 (17.2%)
Total		93 (100%)
Histological Variant (n=93)		
	Transitional Cell	88 (94.6%)
	Squamous Cell	2 (2.2%)
	Urothelial Carcinoma with Squamous Differentiation	2 (2.2%)
	Mixed Urothelial & Squamous Cell	1 (1.1%)
Total		93 (100%)
TNM Staging (n=93)		
T		
	TX	5 (5.4%)
	Ta	21 (22.6%)
	Tis	1 (1.1%)
	T1	34 (36.6%)
	T2	22 (23.7%)
	T3	2 (2.2%)
	T4	6 (6.5%)
	Not Reported	2 (2.2%)
Total		93 (100%)
N		
	N0	63 (67.7%)
	N1	3 (3.2%)
	N2	6 (6.5%)
	N3	11 (11.8%)
	Not Reported	10 (10.8%)
Total		93 (100%)
M		
	M0	78 (83.9%)
	M1	5 (5.4%)
	Not Reported	10 (10.8%)
Total		93 (100%)
Stage		
	Stage 0a	12 (12.9%)
	Stage 0is	0 (0.0%)
	Stage 1	26 (28%)
	Stage 2	12 (12.9%)
	Stage 3	5 (5.4%)
	Stage 4	21 (22.6%)
	Not Reported	17 (18.3%)
Total		93 (100%)
WHO Grade (n=93)		
	High Grade	64 (68.8%)
	Low Grade	27 (29%)
	Not Reported	2 (2.2%)
Total		93 (100%)
CIS (n=93)		
	Yes	4 (4.3%)
	No	87 (93.5%)
	Missing	2 (2.2%)
Total		93 (100%)

prostate cancer, see table 2. Missing histopathological reports for bladder cancer were excluded.

Ninety-three were bladder carcinoma, see table 2. The mean age at diagnosis was 66.3±1.4 years and 77 (82.8%) were males; 88 (94.6%) were transitional cell carcinoma. Twenty-six (28%) had stage 1, 64 (68.8%) were high grade as per the WHO grading scale and 87 (93.5%) had no CIS. The ASR for males was 21.52 in 100,000 and 5.69 in 100,000 for females.

Prostate cancer was the second most common urological cancer with an average age of 68.2±1.1 years at diagnosis, see table 3. Forty-three (89.6%) were acinar adenocarcinoma; 27 (56.3%) were diagnosed stage 4; 22 (45.8%) had nodal involvement and 25 (52.1%) had distant metastasis. The ASR of prostate cancer was 14.48 in 100,000. The average pre-biopsy PSA level was 159.3±49.2 ng/L, prostate volume was 56±4.5 mL, and median Gleason score was seven.

Table 3: Prostate Cancer Histological Variants, TNM Staging, Gleason Score, PSA Levels and Prostate Volume

Prostate Cancer		
Incidence Per Year (%) (n=48)		
	2014	7 (14.6%)
	2015	7 (14.6%)
	2016	7 (14.6%)
	2017	14 (29.1%)
	2018	13 (27%)
Total		48 (100%)
Histological Variant (n=48)		
	Acinar Adenocarcinoma	43 (89.6%)
	Ductal Adenocarcinoma	4 (8.3%)
	Undifferentiated Adenocarcinoma	1 (2.1%)
TNM Staging (n=48)		
T		
	TX	1 (2.1%)
	T1	20 (41.7%)
	T2	23 (47.9%)
	T3	1 (2.1%)
	T4	1 (2.1%)
	*Missing Report	2 (4.2%)
N		
	N0	26 (54.2%)
	N1	22 (45.8%)
M		
	M0	23 (47.9%)
	M1	25 (52.1%)
Stage		
	Stage 1	9 (18.8%)
	Stage 2	6 (12.5%)
	Stage 3	6 (12.5%)
	Stage 4	27 (56.3%)
Total		48
Gleason Score	Median	7
Pre-Biopsy PSA	Mean±SEM	159.3±49.2 ng/L
Prostate Volume	Mean±SEM	56±4.5 mL

DISCUSSION

Although urological malignancies account for 9.4% of all cases with an incidence rate of 16.1% in males and 3.2% in females, prostate cancer has ranked as the tenth most common cancer in GCC states with a total of 3.2% of all cancers¹⁻⁴. Nevertheless, it was the third most common cancer in males in Bahrain, with approximately 8.2% of all cancers diagnosed³⁻⁴. Prostate cancer appears during late adulthood and the incidence increases with advancing age. Our study shows an increasing trend in incidence, 14.5% in 2014 versus 27% in 2018. Our data for prostate cancer showed a lower ASR (14.48/100,000) than the global ASR (29.3/100,000), but a higher rate in comparison to earlier studies in Bahrain and GCC registry¹⁻⁴. Our ASR levels were higher than Korea, Thailand and China, 11.6, 7.2 and 7.1 per 100,000, respectively, but less than Europe, the United States, Hong Kong and Taiwan, 59.3, 142.1, 28.5 and 29.7 per 100,000, respectively⁵⁻⁹. High ASR levels found in our study could be attributed to the excessive use of PSA screening, a relatively young but growing population and diet rich in fats. Our predominant histopathological subtype is similar to other studies¹⁰⁻¹¹. Stage 4 was the most common, similar results were reported by a study in Taiwan⁹. Such a late stage at presentation is mainly due to the lack of a well-established national standardized screening program.

Patients aged 50 years and above are encouraged to measure their PSA levels every two years. A PSA level of >4ng/L, regardless of findings in digital rectal examination (DRE) is an indication for further evaluation with the standard trans-rectal ultrasound-guided (TRUS) biopsy. Other international centers are using ultrasound-guided trans-perineal biopsy due to lower rates of complications; however, this procedure is not used in our center⁷. Management of prostate cancer in our center generally follows the European Association of Urology's (EAU) guidelines¹⁰. For patients with localized and locally advanced prostate cancer, radical prostatectomy with or without pelvic lymph node dissection is recommended. Robotic prostatectomy is preferred over open and laparoscopic approach, due to its better functional and oncological outcomes¹¹⁻¹³. However, our center does not perform this procedure and the patients are referred to external high volume centers. Focal ablative therapy such as cryotherapy and HIFU are also not offered in our center. Radiotherapy, mainly in the form of external beam radiation, is offered to patients with both localized and advanced stages of cancer. Hormonal therapy via androgen deprivation is offered to patients with both localized and advanced prostate cancer. Androgen deprivation is achieved by either surgical castration, a relatively unpopular choice in Bahrain or medically via GnRH agonists such as Leuprolide.

Urinary Bladder Cancer was the fourth most common cancer amongst Bahraini males accounting for 7.9% of all cancers according to GCC register². In our population, bladder cancer was the most common urological cancer, accounting for 66% of all diagnosed cases between 2014-2018, and thus contradicting the regional registry report². Regarding, histological types and grading of bladder cancer, our data is similar to the worldwide reports, with transitional cell carcinoma is the predominant form. ASR for males and females is 21.52/100,000 and 5.69/100,000, both of which are higher than the reported globally, regional and previous local studies¹⁻⁹. Transitional cell carcinoma was the most common documented histological subtype of bladder cancer. Studies performed in China, Taiwan, and Hong Kong reported similar result⁷⁻⁹.

Most patients with bladder cancer present with the common complaint of hematuria, however, there had been instances where the primary tumor was found incidentally during an ultrasound scan. The diagnosis and management of bladder cancer also follow EAU's guidelines¹⁰. Initial diagnosis is done via cystoscopy and transurethral resection of bladder tumor, followed by histopathological evaluation for histological type, presence of CIS and extent of the tumor.

A notable amount of our data was missing due to migration from note-taking to electronic records. Furthermore, there was a lack of standardized documentation of the registered urological cancers. The reporting system of both cancers discussed in this study were not uniform and were variable. This made it difficult to extract specific, yet important data such as pre-biopsy PSA levels, prostate volume, and Gleason score in cases of prostate cancer and WHO grading and CIS status in cases of bladder cancer. Also, patients diagnosed with cancer did not continue treatment in the same hospital and some lost for follow-up. Another limitation of the study was the lack of data about mortality and treatment.

CONCLUSION

Our healthcare system and population should be advised regarding early detection, proper screening methods and disease awareness to ensure a better prognosis. Mortality data was not available; documenting mortality data would pave the way to evaluate our diagnostic approach, medical and surgical interventions.

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