Original Article

Genitourinary Tract Cancers: Frequency and Demographic Characteristics

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Abstract

Context: As one of the most common cancers in clinical practice, genitourinary system tumors are reported to grow worldwide. **Aims:** We aimed to describe the frequency and demographic characteristics of such cancers' in Isfahan Province/Iran. **Materials and Methods:** Information related to the genitourinary system tumors was collected from the Isfahan Cancer Registry. The cancer sites studied were defined according to the International Classification of Diseases (ICD-O; Third Edition) and recorded by associating topography code. **Statistical Analysis Used:** The statistical analyses of d-Base were performed using Microsoft Excel and SPSS v. 20 (Chicago, IL, USA) for windows. **Results:** Among all registered patients with genitourinary cancers, there were 3024 cases with genital system cancers and 2117 cases with urinary system cancers. The frequency of males versus female genital system cancers was (n = 1808 vs. n = 1216; P = 0.01), respectively. The frequency of bladder and kidney cancer was 1655 and 404 cases, respectively. **Conclusions:** According to the analysis, there were higher frequency of ovary and prostate cancer in male and females correspondingly. Associated with the urinary system, cancers of bladder and kidney were higher than others. Further advanced study associated with drug therapy and surgical management seems to be advantageous.

Keywords: *Cancer, frequency, genital, Isfahan, urinary, genitourinary*

Introduction

The organ system of the reproductive organs and the urinary system called genitourinary system or urogenital system. Renal system, urinary tract, or urinary system involved of the kidneys, ureters, bladder, and the urethra. Primary sex organs included as testis in the male and the ovary in the female. The cancers of genitourinary tract are common and include a range of lesions extending from small benign tumors to destructive neoplasms with high mortality.[1] In clinical practice, genitourinary tumors are categorized as one of the most common tumors with a significant morbidity and mortality. The tumors include a broad spectrum associated with age, location, histology, and clinical outcome.

Associated with the urinary system, the malignant transformation could affect any section of the urothelium. More than 90% of urinary system cancers are urothelial carcinoma. Rare cancers comprise squamous cell carcinoma, small cell carcinoma, and adenocarcinoma. Benign neoplasms are also occasionally seen. Rare cancers comprise squamous cell carcinoma, small cell carcinoma, and adenocarcinoma. Benign neoplasms are also occasionally seen.[2] In a recent study performed in Isfahan Province, Iran, a period prevalence of 33.2 was reported for bladder cancer.[3] In an Indian study, in both sexes, genitourinary tumors reported as 20.8% among other cancers.[4]

Regarding to upper tract, urothelium cancers categorized as the vast majority types. Cancers of the ureter and renal pelvis are less common, including only 4% of urothelial malignancy.[4,5]

There are reports regarding to worldwide frequency and pattern of female genital malignancy such as cancers of cervix (66.3%), ovarian (21.1%), corpus uteri (9%), and the vulva (3.6%).[6] In a study performed in the Iranian population with high-risk human papillomaviruses (HPVs) cervical cancer, HPV 16 was the most common HPV detected in our population with a very low prevalence of HPV 18. In addition, HPV 6 and then HPV 11 had the most prevalence rate in the women with uterine cervix (cervical) infection among low-risk HPVs.[7] The previous report confirmed that patients with a higher rate

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of high-risk HPV infection show endometriosis that might develop into cancer.[8]

The benefits of evidence-based strategies in the management of genitourinary tumors have been documented since the 1970s.[9] Therefore, to provide some of the information challenging genitourinary oncology epidemiology research, the purpose of this manuscript was to investigate demographic and the frequency of genitourinary system cancers in Isfahan Province, Iran.

Materials and Methods

Genitourinary cancer data from the years 2011 to 2015 were obtained from the Isfahan Cancer Registry, located at the Isfahan Deputy of Health. The study was conducted to the Isfahan Kidney Transplantation Research Center. The Isfahan Cancer Programme is intended to be recorded all cancer cases in the Isfahan. The cancer sites studied were defined according to the International Classification of Diseases (ICD-O; Third Edition). Genitourinary cancers were defined by the related topography code (C64–C68 for urinary systems, C60–C63 for male genital, and C51–C58 for female genital). The statistical analyses of d-Base were performed using Microsoft Excel and SPSS for windows.[3,10-13]

Statistical analysis

The normality distribution test of the patient population was studied in comparisons associated with the age of males and females. In order to examine the differences between age and frequencies with gender, the *t*-test was used.

Results

There were 5141 patients with genitourinary system cancers. With a minimum of 2 and a maximum of 110, the mean ± standard deviation (SD) associated with age in the population studied was 63.5 ± 15.8 years old. Figure 1 shows the frequency of patients with genitourinary tract cancers according to age. The most occurrences of cancers (82%) were at the ages between 50 and 90 years old of patients' life.

Table 1 shows the frequency of genitourinary tract cancers. As shown in Figure 2, cancers of genital system with a frequency of 3024 were higher than the frequency of urinary system cancers (n = 2117). The frequency of males versus female genital system cancers was (n = 1808 vs. n = 1216; P = 0.01), respectively. In females, the frequency of genital system cancers ranked as: ovary (437), uterine corpus (n = 401) > uterine cervix (n = 237) > uterus (n = 100) > vulva (n = 15) > vagina (n = 11), placenta (n = 1), and unspecified site (n = 14).

In males, the frequency of genital system cancers ranked as: prostate (n = 1648), testis (n = 147), penis (n = 5), and penis and other genital (n = 8).

The frequency of urinary system in both genders ranked as: bladder (n = 1655), kidney (n = 404), renal pelvis (n = 21), ureter (n = 18), and other and unspecified urinary organs (n = 19). The estimated frequency associated with living cases versus dead cases was (n = 2115 vs. n = 809, P = 0.001) for genital system cancers and (n = 1881 vs. n = 236, P = 0.001) for urinary system cancers.

Discussion

Genitourinary oncology focuses on epidemiology, pharmacotherapy, and clinical research of urinary and genital system cancers' in both genders. In agreement with previous publication that reported a higher incidence of genitourinary system cancers in men than in women, in this study, the frequency of men with genitourinary system cancers was approximately 2.1-fold higher than in women. The previous report stated that in males, genitourinary system tumors formed 17.5% of all the malignancies.[2,14]

Regarding to age in this study, with a minimum of 2 and a maximum of 110, the mean ± SD was 63.5 ± 15.8 years. This is in agreement with earlier reports, that confirmed a significant proportion of patients with genitourinary system those suffered in the middle-age.[2,14]

In this study, the frequency of genital system cancers was 1.43-fold higher than the frequency of urinary system

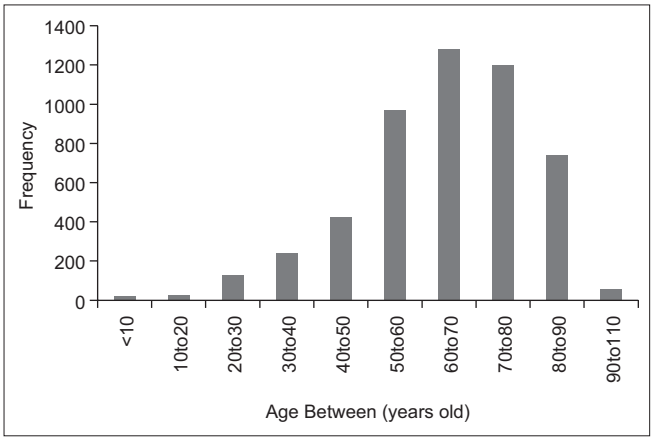

Figure 1: Distribution of age in patients with genitourinary system cancers

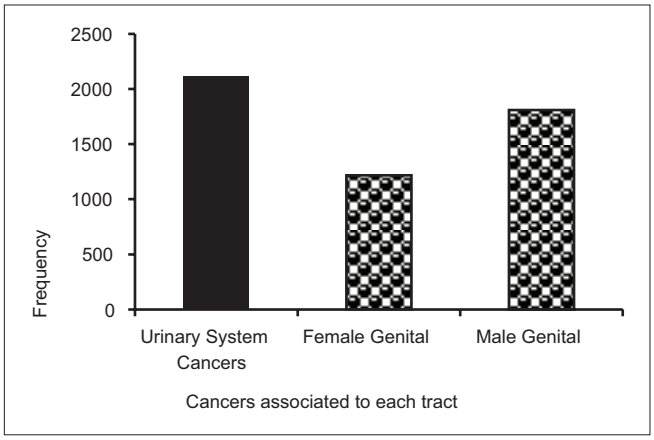

Figure 2: Frequency of genitourinary system cancers

Table 1: Genitourinary system cancers; frequency and demographic

Sites of cancers	Total cases	Living			Deaths		
		Both sexes	Females	Males	Both sexes	Females	Males
Genital system	3024	2215	1005	1210	809	211	598
Female genital	1216	1005	1003	0	211	211	0
Uterine cervix	237	163	163	0	74	74	0
Uterine corpus	401	389	389	0	12	12	0
Ovary	437	352	352	0	85	85	0
Vulva	15	14	14	0	1	1	0
Uterus	100	67	67	0	33	33	0
Placenta	1	0	0	0	1	1	0
Vagina	11	11	0	0	0	0	0
Unspecified females genital organs	14	9	9	0	5	5	0
Male genital	1808	1212	0	1212	598	0	598
Prostate	1648	1066	0	1066	583	0	583
Testis	147	137	0	137	10	0	10
Penis	5	5	0	0	0	0	0
Penis and other genital male	8	3	0	3	5	0	5
Urinary system	2117	1881	368	1513	236	72	164
Bladder	1655	1499	239	1260	156	41	115
Kidney	404	348	72	276	56	21	35
Renal pelvis	21	9	2	7	12	6	6
Ureter	18	2	16	0	0	0	0
Other and unspecified urinary organs	19	7	1	6	12	4	8

cancers. In 2018, prostate cancer as the second most frequent malignancy counted for 1,276,106 new cases that caused 358,989 deaths worldwide.[15-17] In this study, prostate cancer (n = 1648) was ranked as the first place among other men genitals. In addition, the frequency of testicular cancer (n = 147) and penile cancer was low (n = 5). This is in agreement with the previous publication that confirmed testicular cancer occurs in <1 man/100,000 populations[18] and the incidence of carcinoma of the penis is multifactorial and depends on various factors such as prevailing circumcision practice, number of sexual partners, prior HPV infection, and exposure to tobacco products.[19]

Tumor of the female reproductive system such as the cervix, corpus uteri, ovarian, vulvar, vaginal, and choriocarcinoma are an important cause of morbidity and mortality worldwide. It is estimated to be the third most common group of malignancies in women.[20,21] In this study, among genital system, the frequency of the most lethal female malignancies or ovary cancer (352 alive vs. 85 deaths); was higher than other parts.

Regarding to urinary system cancers, in this study, frequency of bladder cancer was higher than the other parts of the urinary system. This is in agreement with previous publications that confirmed urothelial carcinoma of urinary bladder cancer is the fourth most common cancer in men and eighth most common malignancy in women in the world.[3,22] In addition, kidney cancer that corresponded to 348 alive versus 56 deaths was the second-ranked urinary system tumors in the population studied. In 2012, publication was reported an estimated value of 143,000 deaths by renal cell carcinoma.[23]

Furthermore, the identification of high-risk groups that may benefit from scheduled-based program recommended.

Conclusions

This study shows a higher frequency of genitourinary system cancers in men than in women. In addition, the frequency of genital system cancers was higher than the frequency of urinary system cancers. In this study, the Iranian health system should consider the justification for a future approach toward genitourinary system cancers in terms of pharmacotherapy and surgery management. Further studies are recommended to improve the quality and quantity of life in these patients.

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Conflicts of interest

There are no conflicts of interest.

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