

Investigation of Genital System Cancers Prevalence in Isfahan, Iran

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ABSTRACT

Background: Previous publication reported a significant disparity of genital cancer incidence between genders. The aim of this study is to investigate period prevalence (PP) and incidence (Irs) of genital cancer in Isfahan/Iran.

Methods: Information equivalent to those collected by the USA Surveillance, Epidemiology, and End Results (SEER) program was obtained from the Isfahan Cancer Registry. Period prevalence (PP) was calculated per 100.000 persons. The cancer sites studied were defined according to the International Classification of Diseases (ICD-O; Third Edition) and recorded by topography code.

Results: Between the years 2011 to 2015, among all registered cases (3024 cases), 60% applied to the male genital system. The mean (SD) age at diagnosis was higher for men 69.4 (14.7) than women 57.8 (15) (t-test; $P < 0.006$). The calculated PP was significantly (Chi-squared test; $P < 0.001$) higher in males (71.5) than females (49.6) per 100.000 in Isfahan Province.

Conclusions: The PP for ovarian cancer in female and prostate cancer in male was higher than for other genital tumors. To facilitate early diagnosis for better management, we recommend that health-care plans for Isfahan Province/Iran place a greater focus on pharmacotherapy and environmental factors in cancer control.

INTRODUCTION

The female genital system comprises of vagina, uterus, cervix, oviducts (fallopian tubes), ovaries and vulvar. In premenopausal women, ovarian endometrioma can also be a cancer site. The male genital system comprises the prostate, penis, and testis [1].

The incidence of cervical cancer can vary markedly, as for example from 3.6 versus 8.2 per 100.000 for Switzerland and Germany respectively in 2012 [2, 3]. Significant disparities in care are suggested by race, as in the USA where black women with genital cancer had higher cancer-specific mortality than other women with this cancer [4, 5]. Applying fundamental cause theory has clarified factors involved in sociodemographic inequalities in susceptibility to ovarian, endometrial, and cervical cancers [6, 7]. Human papillomavirus infection has a major etiologic part in increasing the rate of cervical cancer among women in developing countries [8]. Regarding male genital cancer, prostate

cancer is the second most common malignancy affecting men worldwide [9]. A Recent US study showed that incidence rates of distant-stage prostate cancer significantly increased during 2010-2014 among men who were white, and of non-Hispanic ethnicity [10]. The present study investigates the prevalence and incidence of genital cancer in Isfahan Province, Iran.

METHODS

Genital cancers data for a period of four years, from 2011 to 2015 diagnostic years, were obtained from the Isfahan Cancer Registry, located at the Isfahan Deputy of Health. The study was conducted by the Isfahan Kidney Transplantation Research Center (IKTRC) and approved by the Isfahan Deputy of Research Committee via the Ethics Committee Code Number of 295115. The Isfahan Cancer Program aims to record all cancer cases in the Isfahan. All pathology centers and other information sources such as hospital medical records,

mortality data provinces, hematology-oncology centers, radiotherapy centers, etc., are obliged to report their data to the Isfahan Cancer Office of Disease Control and Prevention (CDC). The management arm of the program is the deputy of research at the Isfahan University of Medical Sciences.

The cancer sites studied were defined according to the International Classification of Diseases (ICD-O; Third Edition). Genital cancer was defined by topography codes for each gender including topography codes C51 to C63. We used de-identified data including age and gender, the final code for cancer diagnosis and date of report of cancer. The total population for Isfahan City was obtained from the Isfahan/Program and Budget Management Organization. Cancer prevalence (CP;%) was calculated as total cases/total population. Cancer incidence rate (CIR) was calculated as new cases*100.000/number of person years. The statistical analysis of d-Base was performed using Microsoft Excel and SPSS v. 20 (Chicago, IL, USA) for Windows [11, 12].

RESULTS

Over the period of study, for a total population at risk included 2.527.486 males and 2.454.614 females, there were 3024 recorded cases, in which 60% were related to male genital cancer.

The mean (SD) age of patients was higher in men 69.4 (14.7) than women 57.8 (15) (t-test; P < 0.006). As shown in **Figure 1**, most incidences of genital cancer in females (90%) vs males (89%) occurred between the ages of 30–40 vs 50-90 years respectively. The minimum reported age of cancer was 3 years for females and 6 years for males. The calculated PP was significantly (Chi-squared test; P<0.001) higher in male (71.5) vs females (49.6) per 100.000 persons in Isfahan Province.

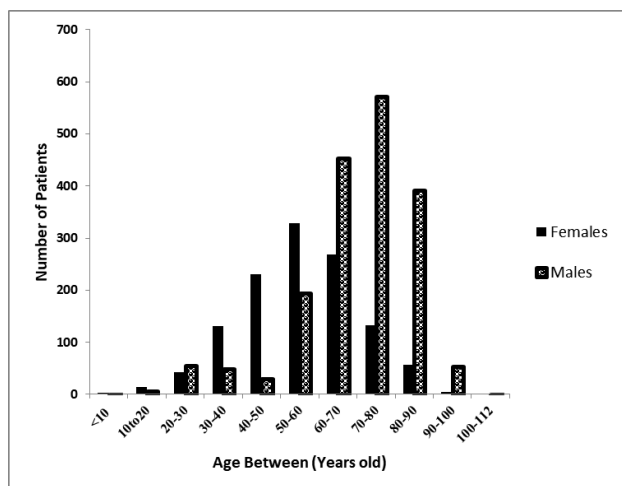


Figure 1. Age distribution related to gender in patients with genital cancer

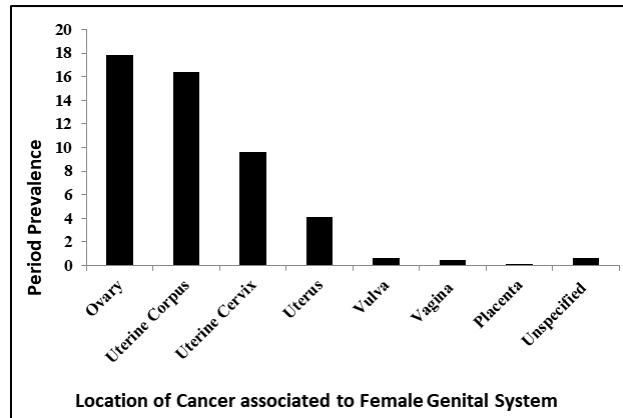


Figure 2. Age distribution related to gender in patients with genital cancer

Figure 2 shows cancer PP by the female genital site. The ranking of PP by cancer site was: ovary, uterine corpus, uterine cervix, uterus, vulva, vagina, and placenta. The ratio of alive to dead cases was ranked as 67/33 for uterus, 163/74 for uterine cervix, 352/85 for ovary, 14/1 for vulva, 389/12 for uterine corpus.

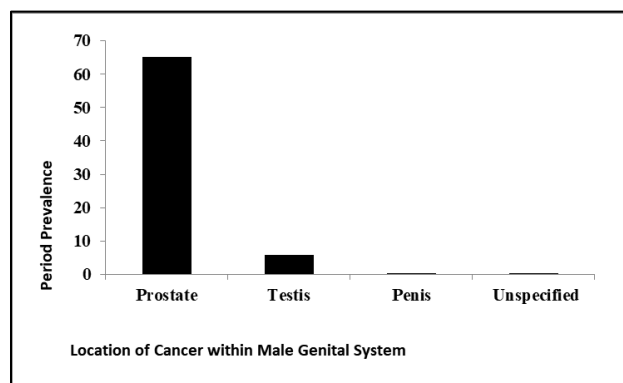


Figure 3. Period prevalence associated to male genital cancer

Figure 3 shows cancer PP by the male genital system. PP was ranked as prostate (65.2), testis (5.8) and penis (0.19). The ratio of alive/death ranked as: 1.066/583 for prostate, 137/10 for testis and 5/0 for penis.

DISCUSSION

Previous research has indicated ovarian cancer to be the seventh most commonly diagnosed cancer in females with an estimated 239.000 new cases and 152.000 deaths occurring annually globally [13]. In agreement with the previous published articles, this study indicated that for the female genital system, ovarian cancer was ranked first. With a period prevalence of 9.6 per 100.000 females in Isfahan Province, Iran, this prevalence reported within the range of 11.4 per 100,000 and 6.0 per 100,000 for Eastern and Central Europe respectively. In this study,

the prevalence of cancer of the uterine body and uterine cervix was 16.4 and 9.6 per 100.000 females respectively [13, 14]. Cervical cancer is more common in younger women, especially in immunocompromised populations [15]. In agreement with previous publication results, the prevalence of cancer of the vulva was 0.61 per 100.000 females. Cancer of the vulva is a rare disease accounting for only 3 to 5% of all gynecologic cancers. The incidence rates of this cancer vary depending upon the country, with the lowest rates reported for Asian and African populations [16].

Among 1.808 males with genital cancers, cancer of prostate was the most common with 65.2 cancer cases per 100.000 for a period of four years. This is consistent with the previous published data showing that prostate cancer was the most frequently diagnosed non-skin cancer in the USA and the third leading cause of cancer death [17]. However, testicular cancer is increasing in incidence in many countries [18, 19].

Finally, the results of this study indicate a need for further research in pharmacotherapy management associated with cancers of ovary and prostate to improve health-service outcomes, particularly in relation to referral systems.

CONCLUSION

Of the 3024 recorded genital cancers, 60% was related to males. The mean (SD) age of patients was higher in men 69.4 (14.7) than in women 57.8 (15) (t-test; $P < 0.006$). The calculated PP was significantly (Chi-squared test; $P < 0.001$) higher in males (71.5) than females (49.6) per 100.000 persons. Ovarian cancer ranked in the first place for females. Cancers of the uterine body and cervix had a PP of 16.4 and 9.6 per 100.000 females. As a rare cancer, the occurrence of vulva cancer was 0.61 per 100.000 females. In males, prostate cancer was the most frequently reported cancer.

DECLARATIONS

Competing of Interest

The authors declare no competing interests.

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