Original Article

Epidemiology of Female Reproductive Cancers in Mazandaran Province (Northern Iran): Results of the Mazandaran Population-based Cancer Registry

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Abstract

Purpose: Cancer is a most important disease, and female reproductive system cancers are the most common cause of women mortality rate. **Materials and Methods:** This cross-sectional study analyzed medical record data for 4460 patients in Mazandaran population-based cancer registry. **Results:** The mean (standard deviation) age of these patients was 53.45 years, and the incidence rate of female reproductive cancers (age-standardized incidence rate) was 8.51 per 100,000 persons-year. These cancers incidences were more in urban than rural, but this difference was not significant. Differences between frequency of uterus and ovary cancers with tumor behavior are significant (P = 0.046). **Conclusion:** This certainly calls for further attention to preventive and treatment planning on female reproductive system cancers.

Keywords: *Cancer, ovary, reproductive, uterus*

Introduction

Cancer is a most important disease in Iran and worldwide.[1] Nowadays, cancer is considered to be the second leading cause of death after cardiovascular disorders.[2] About one-thirds of total cancers in women are female reproductive system cancers.[3] These cancers in female include cervical cancer, cancer of the corpus uteri, ovarian, vulvar, vaginal, fallopian tube cancers, choriocarcinoma, and placental cancers.[4] Female reproductive cancers are estimated to be the third most common group of cancers in women.[3] Malignancies of the female reproductive tract are a significant source of mortality in the world.[4] Considering the different distribution of cancers in the world and the importance of cancer in any country and given the high geographical variations in the field of cancer, it is essential to identify and determine the pattern and type of cancers to do planning at national contribution for cancer control.[5] Statistical data play an important role in decision-making, prevention, and treatment of cancer patients.[6] As yet, there has been no comprehensive study of the epidemiological status of female reproductive cancers in northern Iran. Therefore, in this study, we provide a statistically analyze the data for female reproductive cancers based on the data available from a population-based cancer registry in Mazandaran province in North of Iran.

Materials and Methods

It is a cross-sectional study and population-based survey on 4460 individuals in Mazandaran population-based cancer registry (MazPCR) office which was known as the main center of cancer registry office in Mazandaran province which was located in North of Iran. The data for this project on primary female reproductive cancers diagnosed between 2014 and 2015 (one solar year) were collected based on related checklists MazPCR office of Mazandaran University of medical sciences. Data were obtained from all hospitals, pathology laboratories, diagnostic radiology clinics, and main insurer organizations in Mazandaran Province. The data about cancer-related deaths were collected from the death registry at the health department of Mazandaran University of medical sciences. Age-standardized incidence rates (ASRs) (per 100,000 person-years) were calculated by the direct standardization method. Cancer cases were classified according to of International Classification of Diseases for Oncology the third edition.

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Then, the data were entered into the excel software and were analyzed with SPSS version 16 statistical software (SPSS Inc company, Chicago, USA). Descriptive statistics and Chi-square tests were used. $P < 0.05$ was considered to be statistically significant. Duplicate data were deleted by excel 2013 software. This study was approved by Ethical Committee of Mazandaran University of Medical Sciences.

Results

Of 4460 cancer cases registered in MazPCR during 2014–2015, 183 were female reproductive cancers. Figure 1 shows the frequency of female reproductive cancers with age groups.

Figure 2 shows the distribution of patients in cities of Mazandaran province. According to pathological reports, the frequency of carcinoma *in situ* and malignant primary site was 4.9% and 95.1%, respectively. These reports show frequency of malignancies are well differentiated and moderate differentiated 43.8%, 37.5%, respectively.

Table 1 shows the frequency of involved organs and ASR.

Table 2 presents the mean age (standard deviation [SD]) of these patients according to involved organs.

Table 3 shows the frequency of uterus and ovary cancers according to residents of cities and villages, tumor behavior (*in situ* and malignant primary site), and grade of tumors. The differences between residents of cities and villages and grade of tumors were not significant ($P = 1.000$ and 0.228, respectively).

Discussion

The female reproductive cancers are estimated to be the third most common group of cancers in women.[4,7] Thus, this study was performed to inspect the epidemiological characteristics of female reproductive cancers in northern Iran in comparison with relevant studies. In this study, the mean (SD) age of patients was 53.45 (14.32) years and 18% of individuals were 50–54 years. According to this study, the incidence rate of female reproductive cancers was 8.51 per 100,000 persons-year while in Golestan province (near the Mazandaran province), the incidence rate of female reproductive cancers was 14.39 per 100,000 persons-year.[3] According to Globocan 2012, the ASR of female reproductive cancers in the world and WHO East Mediterranean region are 24.8 and 15.2/100,000 person-years, respectively.[7] This low incidence rate may be elucidated by appropriate medical education and protected sexual behaviors or implementation of effective controlling programs such as screening programs in Mazandaran province. Our study showed that the incidence rate of the cancer of the uterus was 2.58/100000 person-year, which was in line with a

Table 1: Frequency of female reproductive cancers according to involved organs

Organ	Frequency (%)	ASR
Cervix uteri	36 (19.7)	1.48
Corpus uteri	53 (29.0)	2.58
Another female genital organ	17 (9.3)	0.7
Ovary	51 (27.9)	2.65
Placenta	1 (0.5)	0.05
Unspecified female genital organ	19 (10.4)	0.82
Vagina	3 (1.6)	0.07
Vulva	3 (1.6)	0.19
Total	183 (100.0)	8.51

ASR: Age-standardized incidence rate

Table 2: Mean age (standard deviation) of patients according to involved organs

Organ	*n*	Mean age	SD
Vulva	3	60.67	17.010
Vagina	3	57.00	7.000
Cervix uteri	36	52.81	16.341
Corpus uteri	53	56.70	11.635
Another female genital organ	19	47.37	13.338
Ovary	51	52.04	12.236
Unspecified female genital organ	17	55.12	21.673
Placenta	1	32.00	-
Total	183	53.45	14.325

SD: Standard deviation

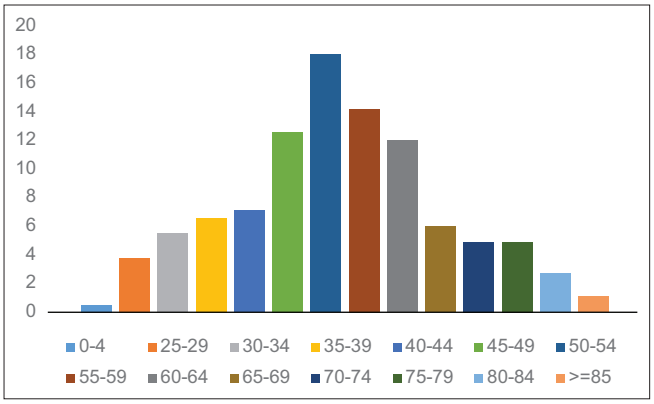

Figure 1: Frequency of female reproductive cancers by age groups

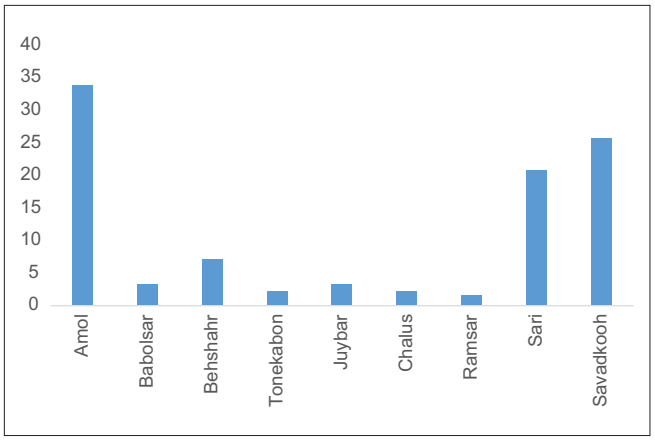

Figure 2: Distribution of cancers of the female reproductive organs according to cities of Mazandaran province

Table 3: Characteristics of patients according to residents, pathological reports, and grade of tumors

Variable	Uterus, *n* (%)	Ovary, *n* (%)	*P*
Residence location			
Urban	36 (53.7)	20 (55.6)	1
Rural	31 (46.3)	16 (44.4)	
Tumor behavior			
Carcinoma *in situ*	8 (7.4)	0	0.046
Malignant, primary site	100 (92.6)	51 (100.0)	
Tumor grade			
Well-differentiated	19 (42.2)	6 (46.2)	0.228
Moderately differentiated	15 (33.3)	7 (53.8)	
Poorly differentiated	10 (22.2)	0	
Undifferentiated	1 (2.2)	0	

population-based study in the Golestan province in North of Iran (city = 2.98 and village = 2.24),[3] but in America, the overall incidence of this cancer increased.[8] This difference may be related to genetic high geographical variations in the field of cancer.[5] However, future studies are needed to discover the true etiology of this difference. Besides, the low incidence rate of cervical cancer in Mazandaran province may be related to the low prevalence of HPV as a main etiologic factor in Iran, for example, the global and national meta-analysis study about the prevalence of human papillomavirus shows that this ratio in Iran is less than world prevalence.[9,10] Our results showed that the ASR of ovarian cancer was 2.65 per 100,000 persons-year. It was not similar to the rates reported for Golestan province in the north of Iran.[3] Our findings showed that female reproductive cancer incidence is more in urban than rural (according to residents of cities and villages in Mazandaran province is 54.7% and 45.3%, respectively). This result was in line with the findings of NegarSadat Taheri *et al*.[3] This may be elucidated by differences in lifestyle, genetic factors,[6] and socioeconomic status.[3] Our results showed that the mean age (SD) of these patients according to involved organs was 53.45 years. The most frequent in corpus uterus and ovary groups was 56.70 and 52.04 years, respectively. Furthermore, the differences between these cancers groups were not significant ($P = 0.179$). The ASR of cervical cancer in Mazandaran female was 1.48 per 100,000 person-year, which was in line with the findings of developed countries.[3] According to our study, differences between frequency of uterus and ovary cancers with tumor behavior (*in situ* and malignant primary site) were significant ($P = 0.046$).

Conclusion

We found higher rates of reproductive cancer incidence in urban than rural. The incidence rate of cervical cancer in Mazandaran province is low, and the ASR of cervical cancer in Mazandaran female was in line with the findings of developed countries. We found significant differences between frequency of uterus and ovary cancers with tumor behavior.

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Conflicts of interest

There are no conflicts of interest.

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