Cancer Incidence in North Western Iran:a Report of Pathology-based Cancer Registries in Abhar County, 2007-2011

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Abstract

Background: We aimed to assess the cancer epidemiology with a focus on the incidence of common cancers based on data collected from pathology-based cancer registries.

Materials and Methods: It was a descriptive study performed on newly diagnosed (incidence) cancer cases collected from pathology-based cancer registries in a 5-year period (2007-2011) in Abhar County, in Zanjan province, Iran. All incidence cancer data collected was 365 cases. Crude and age-standardized incidence rates per 100 000 person years were calculated for each year and both sexes. The age-standardized incidence rate (ASR) per 100 000 person years was calculated by the direct method using the Iranian population.

Results: In a 5–year period from 2007–2011, 363 cases were registered, 249 (68.6%) were males, and 114 (31.4%) were females. The mean age was 65±15.58. For all cancers, the total crude incidence rate was 492 per 100000, and the total age standardized rate was 465 per 100000. Skin (crude rate: 63 per 100000, ASR: 58 per 100000) and stomach (crude rate: 39 per 100000, ASR: 32 per 100000) cancers were the most common cancers in males, and breast (crude rate: 23 per 100000, ASR: 21 per 100000) and skin (crude rate: 20 per 100000, ASR: 19 per 100000) cancers were the most common cancers in females.

Conclusion: According to increasing the numbers of cancer cases, it is necessary to develop and implement comprehensively cancer control programs in this region. As well, the cancer registry is able to planning and evaluating cancer control programs.

*Key words:*Cancer, Incidence, Pathology-based registry, Iran.

Background

Cancer,asachronic and non-communicabledisease,has become apublic health problem throughout theworld especially in middle-and low-income countries. As estimated in 2008, 12.66 million people were diagnosed with cancer across the world, and 7.56 million people died from the disease .Also, cancer was estimated to account for around 14% of all deaths worldwide in 2008[1]. It is expected thatthe number of people living with a history of the disease will be close to 75 million people worldwide in 2030 [2].

In Iran, cancer is considered the third cause of death after coronary heart disease (CHD), accidents and other events [3].

To reduce cancer mortality and morbidity, health care systems have primarily focused on prevention and treatment strategies [4] so that World Health Organization(WHO) states that the global burden of cancer can be reduced and controlled by implementing three evidence-based strategies: preventing cancer from occurring in the first place, detecting cancer earlier, and managing patients with cancer[1].Therefore, cancer registry

This descriptive study was carried out on newly diagnosed (incidence) cancer cases collected from pathology-based cancer registries ina5-year period (2007-2011) in Abhar County. .

In this County, pathology-based cancer registries (ABCR) were launched in 2007. These registries were both public and private pathologylaboratories. In the other words, there are one public and one privatepathologylabs. The public pathologylab is belonged to Emdadi hospital, and the private pathologylaboratory is pertained to Dr.Mohseni's lab. In each registry, there was data on variables such as age, gender,

data can be important to assess risk factors of cancer development for primary prevention of cancer[5]. As well, information on cancer incidence is essential for health care planning because people with cancer require treatment, monitoring for recurrence, and screening for other cancers. Also, they are at the risk of permanent impairment or disability[6].

This study aimed to assess the cancer epidemiology with a focus on the incidence of common cancers based on data collected from pathology-based cancer registries in Abhar County-during 2007-2011.

Materials and Methods

Abhar County was located in Zanjan province, and in northwestern Iran. Its area is about 10000 km2, and its height is 1540 m above the sea level. The maximumtemperatureis38° C, and the minimumtemperature is 15.5° C below zero.

residence, a location of which the biopsy is taken, a tissue of pathology, final diagnosis, and date of biopsy. As well, classification of cancer cases was done based on The International Classification of Diseases for Oncology (ICD-OC: topography with ICD-OM: morphology) bytrained physicians coded information in close coordination with expert pathologists. Records were gathered manually from pathologic centers. All incidence cancer data collected was 365 cases.

Before any analysis, a process was carried outas follows:

At first, duplicate records within each of pathology centers were identified according to age, gender, residence, a location of which the biopsy is taken, final diagnosis, and date of biopsy.

Second, duplicated cases were checked and removed. Finally, 363 cases had inclusion criteria.

Crude and age-standardized incidence rates per 100 000 person years were calculated for each year and both sexes. The age-standardized incidence rate (ASR) per 100 000 person years was calculated by the direct method using the Iranian population.

The analysis of data was performed by SPSS statistic software (version 19.0, SPSS, Inc., Chicago, IL, USA) package. To analyze, descriptive statistics such as frequency tables, mean, and standarddeviation was used, as well as chi-square test was applied to determine an association between demographic factors and the cancer risk. Significance level of 0.05 was considered.

Results

In a 5–year period from 2007–2011, 363 new cases were registered in the pathology registries in Abhar County, in Iran. Of the registered cases, 249 (68.6%) were males, and 114 (31.4%) were females.The meanagewas 65±15.58.Almosttwo thirds of cancer cases wereinurban areas.The majority ofcaseswere inthe age group70-79(30.7%) (Table1).

For all cancers, the total crude incidence rate was 492 per 100000, and the total age standardized rate was 465 per 100000.

Crude incidence rates were 156 per 100000 and 336 per 100000 for all cancers in female and male respectively. Age-standardized rates (ASRs) were respectively 153 per 100000 and 312 per 100000 in women and men.

Table 2 shows number of cases, crude rates, and ASRs of the 6 most common cancers by sex. As can be seen, skin (crude rate: 63 per 100000, ASR: 58 per 100000) and stomach (crude rate: 39 per 100000, ASR: 32 per 100000) cancers were the most common cancers in males, and breast (crude rate: 23 per 100000, ASR: 21 per 100000) and skin (crude rate: 20 per 100000, ASR: 19 per 100000) cancers were the most common cancers in females.According to the calculated ASRs, Other most common cancers were prostate (35 per 100000) and bladder (26 per 100000) cancers in men. Also, a significant association was seen between incidence of cancer and gender (P<0.004) so that cancerincidencewas greaterinmen than women.

Table 3 shows that the maximum ASR was in 2010 (43 per 100000), and afterwards the ASR of cancers in 2009 was high (33 per 100000).

Table1. General Characteristics of incidence cancer cases in Abhar County (n=363)

Variable		Number of cases	Percent
Gender	Male	249	68.6
	female	114	31.4
Age	10-19	3	0.9
	20-29	11	3
	30-39	10	2.8
	40-49	31	8.6
	50-59	58	16.1
	60-69	76	21.1
	70-79	111	30.7
	> =80	61	16.9
Residence	Urban	220	60.8
	Rural	134	37

Table 2. Case numbers, crude, and age-standardized incidence rates (ASR) per 100,000 person years of the common cancers in men in Abhar County, Iran (2007–20011).

Male				Female			
Organ	No. of cases	Crude rate	ASR	Organ	No. of cases	Crude rate	ASR
Lymph nodes	8	10	9.4	Stomach	14	19	18
Stomach	30	39	37	Breast	17	23	21
Bladder	21	28	26	Ovary	4	5.4	5
Esophagus	18	24	22	Esophagus	6	8	7.4
Prostate	20	38	34	Gallbladder	3	4	3.5
Skin	48	63	58	Skin	15	20	19

Table 3. Crude and age-standardized incidence rates per 100,000 person years (ASRs) for all cancer types combined among male and female reported to pathology-based cancer registrations in 2007-2011.

Year of study	Male			Female		
	No. of cases	*Crude*	*ASR*	*No. of cases*	*Crude*	*ASR*
2007	49	67	62	22	30	30
2008	54	73	68	20	28	27
2009	63	85	78	24	32	33
2010	57	77	72	32	44	43
2011	26	34	32	16	22	20

Discussion

Various studies on incidence cases of cancers were conducted in Iran using population-based cancer registries. Information contained in population-based cancer registries about cancer cases was obtained through hospitals, pathology laboratories, diagnostic radiology clinics, outpatient public and private clinics, and death certificates. Such cancer registries are established in provinces, such as Fars, Golestan, Ardabil, Semnan, Tehran, etc. At the county, a pathology-based cancer registry, especially in poorly covered areas, can improve cancer reporting [7]. This is the first report of pathology-based cancer registries in this county.

Findings indicated that in this region crude and ASR incidence rates of cancers were moreinmale than female. Studies on population-based cancer registries, and the report of World Health Organization showed same results [1, 3, 5, 8-12].

In this study, breast and prostate cancers were respectively the second and third most common cancer among women and men. According to the reports obtained from population-based cancer registries in Iran, the most common cancer among Iranian women was breast cancer [3, 8-9, 11-12]. Throughout the world, breast cancer is the most common cancer diagnosed in women. It was estimated that 1.38 million women across the world were diagnosed with breast cancer in 2008. Breast cancer incidence has increased in most countries in the last decades, with the most rapid increases occurring in many of the developing countries. Reproductive behavior and the use of exogenous hormones, as well as differences in weight, exercise, diet and alcohol consumption, are thought to underlie the differences [1, 13-14]. The report of World Health Organization (W.H.O) revealed that an estimated 900,000 men were diagnosed with prostate cancer in 2008 worldwide. There have been large increases in the incidence of prostate cancer in many countries, with little change or small decrease in mortality [1, 15-16]

Our study showed the most common cancer was skin cancer in male and females. Other common cancers were stomach and bladder in men, and esophagus cancer in women in this region. According to the reports obtained from population-based cancer registries in Iran, other most common cancers were colorectal, stomach, and esophagus in females. Bladder, prostate, colorectal, and esophagus were common cancers among males [3, 8-9, 11-12]. Studies indicated that the developing countries carry the biggest burden of esophagus cancer, with 480,000 newly diagnosed cases across the world in 2008[1, 17]. Very high incidence rates for esophageal squamous cell carcinoma (ESCC) have been reported from certain areas of the world, including the northern areas of China and Golestan Province in north-eastern of Iran [8, 10, 18-20]. Reports stated that in the world, 990,000 people were diagnosed with stomach cancer in 2008. There is wide geographical variation in incidence across the world, much of which is related to differences in diet and

Helicobacter pyloriinfection. Incidence rates of stomach cancer have been declining worldwide for several decades. The reasons for this decrease are not well understood, but may include improvements in diet, food preservation and storage [1, 17]. Based on studies conducted in Iran and the world, the majority of bladder cancer occurs in males and there is a 14-fold variation in incidence internationally[16]. Malignant neoplasms of the urinary bladder account for about 1,400 registered new cancer cases and 1,100 deaths annually in the G.D.R (Global Death Rate). As compared with other developed industrialized countries, incidence and mortality from bladder cancer is relatively low in the G.D.R[21]. Smoking and occupational exposures are the major risk factors in Western countries, whereas chronic infection with Schistosomahematobium in developing countries, particularly in Africa and theMiddle East, accounts for about 50% of the total burden[22]. Researches performed in Muslim countries in west Asia, such as Iran, demonstrated that there was the low incidence of cervix cancerbecause sexual and reproductive factors and oncogenic subtypes of human papillomavirus play an important role in the risk of this cancer [9-10, 23], but at the present study cervix cancer was one of themost commoncancers. Thisdifference could beduetolowsample sizeof our study.

In this study, similar to other studies[9], results showed that themucholder, morelikely to developcancer so that incidence cases in the 60-69 and 70–79 age groups are more than other age groups, and there was a significant association between incidence of cancer and age groups (P<0.001).

Considering that Individuals who have one or more first-degree relatives with cancer are often at increased risk for developing cancer, it is necessary to design a study in this county for assessing family history and heredity, especially about breast cervix, and prostate cancers, because family history assessment is important as a clinical marker of increased risk for disease [24-26]. Also, other factors affecting incidence of cancers should be studied.

Conclusion

According to increasing the numbers of cancer cases, it is necessary to develop and implement comprehensively cancer control programs in this region. As well, the cancer registry is able to planning and evaluating cancer control programs.

Acknowledgements

Conflict of Interest

There is no conflict of interest to be declared.

Authors' contributions

All authors contributed to this project and article equally. All authors read and approved the final manuscript.

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