Comparison of Age-specific and Age-standard Female Breast Cancer in Iran and Western Countries

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ABSTRACT

Purpose: Comparison of age-specific and age-standard female breast cancer in Iran and western countries.

Objective: breast cancer is the most common cancer among women. The aim of the present study was to compare age-specific and age-standard incidence rate of breast cancer in Iran with western countries.

Material and methods: Based on national cancer registry of Iran, (2005-2006) 6265 cases were studied. Age-specific and age-standard female breast cancer rates were calculated and compared to western countries.

Results: The median age of breast cancer in Iran, was 49 years. Crude incidence rate was 36.4 per 100000 women. Peak age-specific incidence rate was 74.3 per 100000 in 50-54 age group. Age-standard incidence rate of breast cancer was 24.93 per 100000 in Iran.

Conclusion: Iran was a low incidence area for breast cancer with a younger peak age of disease similar to most Asian countries and dissimilar to western countries.

KEYWORDS: Breast cancer, age, incidence, Iran, epidemiology.

INTRODUCTION

Breast cancer is the most common cancer among women in developed western countries (1) and is becoming more significant in many developing countries (2). Breast cancer has been reported to be the leading tumor among females in US SEER (1999-2001) , Jordan (1996-2001) , Egypt (19992001) , Cyprus (1998-2001) and many other countries including Pakistan and India (3-5) and the incidence of breast cancer is increasing both in Asia and western countries(1).

Cancer Registry report of Iran also indicates Breast cancer to be the most common female malignancy (6).

Numerous investigators from Asian and western countries have presented the epidemiologic and clinical data regarding women with breast cancer. The important consideration is that the peak age for breast cancer is between 40 and 5o years in the Asian countries, but the peak age in the western countries is between 60 and 70 years (2, 7). For example a comparison has been made of the age-specific breast cancer incidence rates in Sweden and Singapore at 5-year intervals from 1968 through 1993 (7) In this study the incidence in Sweden continued to increase even after menopause, whereas the incidence in Singapore peaked at ~ 5o years of age and then plateaued.

Also the age standardized incidence rates (ASRS) per 100000 females have been reported to be high among US SEER females (97.2) in comparison to Cypriot (57.7), Egyptian (49.6) and Jordanian (38) females (3).

The present aims to report the peak age, age-specific and age-standardized incidence rates of breast cancer in Iran in 2004-5 timeframe, according to national cancer registry, and also compare it to western countries.

MATERIAL AND METHODS

Based on National report of health administration of Islamic Republic of Iran , in 2005-2006 period , about 6674 new breast cancer cases were reported according to ICD-10 codes . Excluding 196 pre-cancer lesions and 213 male breast cancers, the remaining 6265 cases were included in the study.

Cancer registry data of health administration of Islamic Republic of Iran was used(6).data was actively collected from all pathology centers of the country. Hospital-based and death certificate-based data were not included. it was estimated that available data covered 80% of cancer cases.

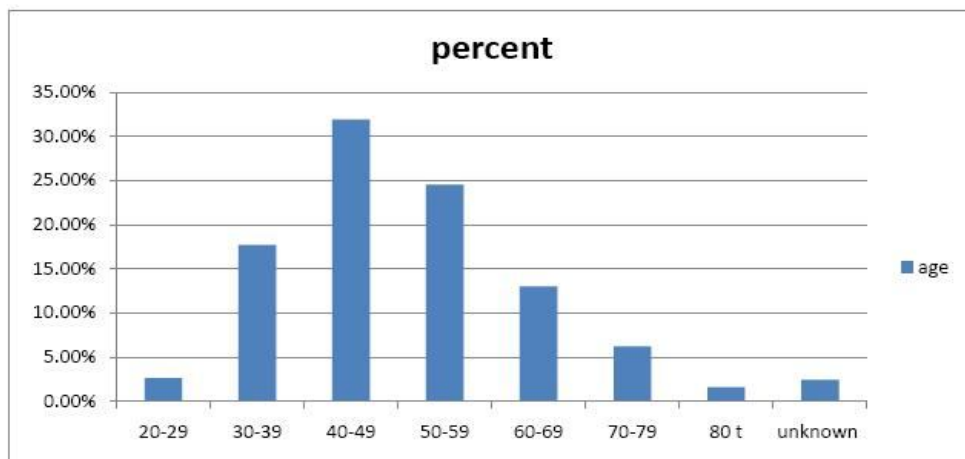Age-specific incidence rate of breast cancer was calculated in 5 year age groups and was compared to age-

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specific rate of breast cancer in Australia and United states in corresponding timeframe (2005-2006).

At the next step age-standard incidence rate of breast cancer in Iran was directly compared to standard world population, 2005 and USA female population, 2000.

Comparison of incidence rates with other countries was based on cancer registry center of Australia (5) and USA (3, 4). Data analysis was performed using SPSS software version 17. Among 6265 studied female breast cancer cases, the age was uncertain in 151 cases (2.4 %). There was no report of breast cancer below 20 years of age, and the median age of breast cancer patients was 49 years old.

The frequency of Iranian female breast cancer for different age groups is shown in figure 1.

Incidence rate per 100000 women

Figure 1 – The frequency of Iranian female breast cancer for different age groups in 2005-6 periods.

Crude incidence rate of breast cancer was 36.4 per 100000 women.

Based on age-specific incidence rate, the cancer incidence rate was increasing until 54 years of age that is 0.8 per 100000 in 20-24 age group increasing to

74.3 per 100000 in 50-54 age group. Decreasing incidence rate accrued after the mentioned peak age and above 85 years old, the incidence rate was 22.1 per 100000.

Age-specific incidence rate of female breast cancer in Iran in 5 years subgroups was compared to data from USA and Australia (table 1).

Table 1-comparison of age-specific breast cancer incidence rate in Iran, USA and Australia

Age group	Iran 2005-6	US SEEN 2002-6	Australia
			2005
15-19	0	0.2	0
20-24	0.8	1.4	1.8
25-29	5.9	8.1	7.2
30-34	14.7	25.6	24.2
35-39	33.1	58.5	63.3
40-44	47.9	118.4	123.1
45-59	74	185.3	193.6
50-54	74.3	229	235.5
55-59	69.3	288.5	266.5
60-64	69.1	351.9	313.1
65-69	48.6	394.4	339.6
70-74	43.7	415.4	278.3
75-79	44.5	441.9	291.8
80-84	58.5	428.7	283.2
85 t	22	342.1	291.3

The age-specific incidence of female breast cancer in Iran is lower than USA and Australia in all age groups.

Highest incidence (peak) age group in Iran, USA and Australia are 50-54, 74-79 and 65-69 years, respectively (Figure 2).

Age-standard incidence rate of breast cancer in Iran according to world population was 24.93 per 100000 women in 2005-6 and based on standard population of USA in 2000 was 32.07 per 100000.

Comparison of age-standard breast cancer incidence rate of Iran, USA and Australia is shown in Table 2
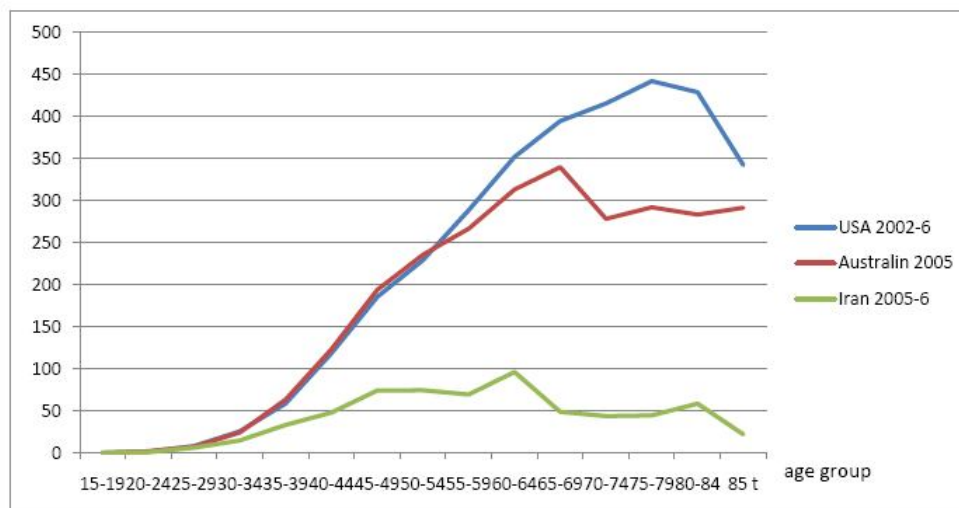

Figure 2 – Companion of breast cancer age-specific incidence rates of Iran, USA and Australia.

Table 2 – Comparison of age-standard breast cancer incidence rate of Iran, USA and Australia

SIR	Standard population	
	World	US (2000)
Iran (2005-6)	24.93	32.07
USA (2002-6)	84.9	117.5
Australia (2005)	88.3	No data

DISCUSSION

As presented in our study the peak age specific incidence rate of breast cancer in Iran, USA and Australia were 50-54, 70-79 and 65-69 years, respectively. In most Asian countries, including Singapore, Japan, India, Korea, China and Thailand, the peak incidence of breast cancer has been reported to be at about 45-50 years but the incidence of breast cancer is increasing rapidly in these countries (8-9).

In Sulaymaniyah city of Iraq, neighboring Iran, the mean age of breast cancer was 47.4 with 60% of cases occurring pre-menopause. The peak incidence was in 55-59 age groups (10).

In contrast the Epidemiology and End Results (SEER) program indicates that more than half of all cancers in USA occur in patients aged $\geq$65 years (11).that is , Iran and Asian countries follow a pattern of rapid increase until menopause followed by a plateau in contrast to steady increase by age even after menopause, in USA and Australia.

The variation of peak incidence of breast cancer in Iran (50-54) and Asian countries (40-50) in comparison to Western countries including USA (75-79) and Australian (65-69) is a very important aspect of disease which should be considered. Different explanations have been used to explain this variation including geographic variation, racial and ethnic background, genetic variation, lifestyle, environmental factors, socioeconomic status, the presence of known risk factors, utilization of screening mammography (12), various ER – PR cases (13), smoking at earlier age (14), late marriage (15), older age at first birth, lower parity, lack of breast feeding, younger age at menarche, older age at menopause, use of menopausal hormone therapy (16), physical inactivity, postmenopausal obesity, alcohol consumption(16) and nutrition (17). receptor status and histopathologic subtypes seem to be impressive. status of estrogen-progestrone receptors as a probably effective factor influencing different incidence patterns, are not determined in the present study. overview in histopathologic subtypes of the present study population data-set

revealed invasive ductal carcinoma(80% of total cases) and lobular carcinoma(5.5%) as the most common subgroups(6). In American National Cancer institute`s surveillance, epidemiology, and End Results(SEER) program, the most common histopathologic subgroup was ductal carcinoma(73.7%) followed by lobular carcinoma(8.4%) (11). More detailed future studies might clarify, interprete and conclude results. Three main questions regarding breast cancer should be answered in any society. The first question is the best primary prevention methods like a change of nutrition, lifestyle or any other known risk factor. The second question is the best age to start screening for secondary prevention (early detection). The answer to both these questions needs a good understanding of demographics of disease in that particular region and reflecting to the existing situation in order to better health care. the third question is why different patterns of disease are observed which this question is hoped to result in many practical studies to clarify more details of the subject.

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