Studying the Incidence Rate of different types of Cancer in Patients Referred to the Radiotherapy and Oncology Department of Ahvaz Golestan Hospital

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ABSTRACT
Background: Cancer is a leading cause of death and overall cancer mortality is increasing worldwide. The burden of cancer varies across countries according to differences in risk factors, detection practices, treatment availability, age structure and completeness of reporting. Population-based cancer indices are essential tools for measuring progress against these diseases. These data can be used to convince policy makers of the importance of cancer prevention, early detection, and treatment.

Materials and Methods: This descriptive retrospective study was performed at Ahwaz Golestan hospital radiotherapy and oncology center. All cancerous patients who have been referred to this center during 2001-2011 were studied. The patient’s gender and cancer type were extracted and the data were analyzed with SPSS version 17.

Results: Total of 14156 patients were studied of them, 52.47% were female and 47.53% male. Cancer incidence has been increased during this period in both sexes and for all cancer types except liver and nasopharyngeal cancers and melanoma. Five common cancers among men were brain&CNS (11.33%), lung (8.04%), colorectal (7.55%), nonmelanoma skin cancers (7.21%) and bladder (6.42%). Five common cancers among women were breast (39.26%), brain&CNS (6.77%), colorectal (5.55%), cervical (4.55%) and nonmelanoma skin cancers (4.07%). Of all cancers among men and women, the rates of metastases were respectively 11.21% and 8.48% with unknown origin.

Conclusion: Cancer incidence has been increased in both sexes and for all cancer types except liver and nasopharyngeal cancers and melanoma. This increasing trend can be related to increase of detection and more complete health care services but we cannot dismiss the overall incidence of new cases in Khuzestan.

Keywords: Cancer types, Cancer incidence, prevention

INTRODUCTION
Significant and important difference in the incidence rate of cancer in different parts of the world show that there are many types of cancers are preventable. Precise percentage of preventable cases of cancer deaths is not known, but it is estimated that this rate is approximately 75 to 80 percent (1). Another point is that cancers is not confined to wealthy and western countries, but are expanding and even the shift to middle and low income countries.

This is partly because that these countries are formed 80% of the population of the world, the other part is due to increasing the life expectancy in these countries and also the prevalence pattern of Western life (lack of exercise, tobacco use, high fat and calorie diet) in them (2). The cancer death in developing countries is more than developed countries and over 70% of cancer deaths occur in low and middle income countries. Because in these
countries, cancers are diagnosed in late stages and resources for early diagnosis and treatment are limited (3). In industrialized and advanced countries 3 types of most common cancer in men are prostate, lung and colorectal cancers and in women are breast, colorectal and lung cancers. In developing countries 3 types of most common cancers in men are lung, gastric, liver cancers and in female are breast, the cervix and gastric cancers, these cancers are the most common causes of cancer death (4-6). According to the mentioned cases and also this important point that cancer is the most common cause of death apart from accidents after cardiovascular diseases in Iran and also since the studying the pattern kinds of cancer by busing the incidence rate, Mortality rate and prevalence rate has important role in future researches about this disease and treatment and health planning and strategies of each country and also due to the lack of statistics or studies on the incidence of kinds of cancer in the South West region of the country, especially the province of Khuzestan, this subject in the Golestan center was assessed as the main center of radiotherapy and oncology in the South West.

MATERIALS AND METHODS

All patients with types of cancer from the beginning of 2001 until the end of 2010, referring to the section of radiotherapy and oncology of Golestan hospital in Ahvaz were 14156 people. Of all files of these patients, type of cancer and sex of patients were recorded. Information collected was classified by year. Data is pooled as tables and statistical graphs, and the results were analyzed with SPSS17 software. Patient file data was extracted and investigated without registration the name of patient in this study, so there was no particular ethical consideration and the information contained in the file was not available to other organs.

RESULTS

The frequency of types of cancer in the years studied, regardless of the gender of patients and type of cancer, only to show the total number of patients admitted each year (Figure 1) shows a significant difference in the overall incidence of cancer and the increasing process (P= 0.0001).

![Figure 1. Frequency of cancer cases in the studied years](image)

Frequency of types of cancers in the years studied in terms of sex in each year and regardless of the type of cancer (Figure 2) that shows a significant difference (P= 0.017) means the gender distribution in the years studied was not the same.
Studying the Incidence Rate of different types of Cancer in Patients

Figure 2. Frequency of studied cancers in terms of the year and sex
In the term of frequency bladder cancer in terms of the age and sex, in the entire years (Figure 3) incidence rate was higher in men than women. Significant difference was in the incidence rate of bladder cancer and increasing process (P-value = 0.0001).

Figure 3. Frequency of bladder cancer in terms of the sex in the studied years
In terms of frequency of cancers of the brain and nervous system (Figure 4) significant difference in the incidence rate and increasing process is obvious (P-value= 0.0001).

Figure 4. Frequency of brain and nervous system cancer in terms of the sex in the studied years
The frequency of colorectal cancers (Figure 5) shows a significant difference and increasing process in the incidence rate (P-value= 0.0001).
Studying the Incidence Rate of different types of Cancer in Patients

Figure 5. Frequency of colorectal cancer in terms of the sex in the studied years
The frequency of Hogkin's lymphoma (Figure 6) show significant difference and increasing process in the incidence rate (P-value= 0.0001).

Figure 6. Frequency of Hogkin's lymphoma in terms of the sex in the studied years
The frequency of kidney cancer and appendices (Figure 7) show significant difference in the incidence rate and the existence of increasing process (P-value= 0.001).

Figure 7. The frequency of kidney cancer and appendices in terms of sex in the studied years
The frequency of laryngeal cancer (Figure 8) indicates significant difference in the incidence rate and the existence of increasing process (P-value= 0.0001).
The frequency of laryngeal cancer (Figure 8) indicates significant difference in the incidence rate and the existence of increasing process (P-value= 0.0001).

The frequency of leukemia (Figure 9) indicates significant difference in the incidence rate and the existence of increasing process (P-value= 0.0001).

The frequency of liver cancer (Figure 10) indicates that there is no significant difference in the incidence rate of this cancer (P-value= 0.14).

The lung cancer (Figure 11) indicates significant difference in the incidence rate and the existence of increasing process (P-value= 0.0001).
Studying the Incidence Rate of different types of Cancer in Patients

Figure 11. The frequency of lung cancer in terms of sex in the studied years
Multiple myeloma (Figure 12) marks a significant difference in the incidence rate and an existence of increasing process ($P$-value $= 0.007$).

Figure 12. The frequency of multiple myeloma in terms of sex in the studied years
Nasopharyngeal cancer (Figure 13) shows that there is no significant difference in incidence rate ($P$-value $= 0.148$).

Figure 13. The frequency of nasopharyngeal cancer in terms of sex in the studied years
Non-Hogkin's lymphoma (Figure 14) marks a significant difference in the incidence rate and an existence of increasing trend ($P$-value $= 0.0001$).
Studying the Incidence Rate of different types of Cancer in Patients

**Figure 14.** The frequency of Non-Hogkin's lymphoma in terms of sex in the studied years
Esophageal cancer (Figure 15) marks a significant difference in the incidence rate and an existence of increasing process (P-value= 0.0001).

**Diagram 15.** The frequency of esophageal cancer in terms of sex in the studied years
Cancers of the oral cavity (Figure 16) show a significant difference in the incidence rate and an existence of increasing trend (P-value= 0.0001).

**Figure 16.** The frequency of cancers of the oral cavity in terms of sex in the studied years
Pancreatic cancer (Figure 17) marks a significant difference in the incidence rate and an existence of increasing process (P-value= 0.0001).
Studying the Incidence Rate of different types of Cancer in Patients

Figure 17. The frequency of pancreatic cancer separate sex in the studied years
Gastric cancer (Figure 18) marks a significant difference in the incidence rate and an existence of increasing process (P-value= 0.0001).

Figure 18. The frequency of gastric cancer in terms of sex in the studied years
Thyroid cancer (Figure 19) marks a significant difference in the incidence rate and an existence of increasing process (P-value= 0.007).

Figure 19. The frequency of thyroid cancer in terms of sex in the studied years
Tissue sarcoma (Figure 20) marks a significant difference in the incidence rate and an existence of increasing process (P-value= 0.0001).
Figure 20. The frequency of soft tissue sarcoma in terms of sex in the studied years.

Bone sarcoma (Figure 21) marks a significant difference in the incidence rate and an existence of increasing process (P-value= 0.002).

Figure 21. The frequency of bone sarcoma in terms of sex in the studied years.

Skin cancers (nonmelanoma) (Figure 22) marks a significant difference in the incidence rate and an existence of increasing process (P-value= 0.0001).

Figure 22. The frequency of Skin cancers (nonmelanoma) in terms of sex in the studied years.

Melanoma (Figure 23) shows no significant difference in incidence rate (P-value= 0.85).
Studying the Incidence Rate of different types of Cancer in Patients

**Figure 23.** The frequency of melanoma in terms of sex in the studied years
For both types of testicular and prostate cancer (Figure 24) there is a significant difference in the incidence rate and increasing process (P-value= 0.0001).

**Figure 24.** The frequency of testicular and prostate cancer in terms of the studied years
Breast Cancer (Figure 25) marks a significant difference in the incidence rate and an existence of increasing process (P-value= 0.0001).

**Figure 25.** The frequency of breast cancer in the studied years
All four women's specific type of cancer (Figure 26) have significant changes and increasing process (P-value= 0.0001).
Studying the Incidence Rate of different types of Cancer in Patients

**Figure 26.** The frequency of specific women cancers in the studied years

In term of the cancers elsewhere in the body (Figure 27) significant difference in the incidence rate and increasing process is clear (P-value= 0.0001).

**Figure 27.** The frequency of the cancers elsewhere in the body in terms of the sex in the studied years

Metastases of unknown origin (Figure 28) show a significant difference in the incidence rate and an existence of increasing process (P-value= 0.0001).

**Figure 28.** The frequency of Metastases of unknown origin in terms of the sex in the studied years

The overall frequency of types of cancer in the studied years was shown in Figure 29.
Figure 29. Total frequency percentage of types of cancers in the study years
Frequency percentage of type’s cancers among males is shown in the Figure 30 in the studied years.

Figure 30. The frequency percentage of types of cancers in males in the studied years
Frequency percentage of type of cancers among females is shown in the Diagram 31 in the studied years.
DISCUSSION AND CONCLUSION

Same studies have been conducted in the Middle East and Iran. According to a study to evaluate the incidence rate of cancers in five provinces of Iran in a 5-year period took place, it was predicted to increase that annual incidence rate of types of cancer in 2010 in comparison with 1996 by 65% (95% for women and 46% men) (7). According to this study the most common cancers in men are cancers of the gastric, esophagus, bladder, lung, colorectal, and prostate and in women, breast, gastric, esophageal, colorectal, leukemia and cervical cancers.

In our study, significant changes were seen in the incidence rate of various types of cancer and sex distribution of different types of cancer, So that the incidence rate of various types of cancer was increased approximately two-fold, regardless of the gender of patients during the study period.

Five most common cancer in men and are the cancers of the brain and nervous system, lung, colorectal, non-melanoma skin cancer and bladder respectively.

In women, breast, brain and nervous system, colorectal, non-melanoma skin and cervix cancers are common cancers. In addition, metastases of unknown origin include (11.21%) of the total cases in men (8.48%) of all cases in women. In recent years, the increasing incidence rate of cancer, or in other words increasing the number of referrers to the center can be mainly attitude to increase the detection of cancer, increase related treatment services, and as a result increasing the proportion of patients with cancer receiving treatment services. It also increases the risk of developing to cancer in Khuzestan province cannot be excluded.

According to the study that is conducted in Khuzestan province, as well as there are significant differences in the patterns of incidence of cancer and mortality in different geographical areas of the country (8), The results are unique to this province and cannot be generalized to whole the country and the wider study at the country level is recommended. For example, as mentioned previously, according to the study brain cancers and the nervous system, are kinds of common cancers in both sexes.

One of the reasons for the high prevalence of this type of cancers can be almost all patients of provinces and also some neighboring disadvantaged provinces referred to the center of Golestan as the main center for neurosurgery and radiotherapy to receive health care. Of course, certainly the increased risk of developing and many other reasons also exist among that the debates about causes of each one it is required separate studies. Finally with regard to this fact that cancer is an incurable disease and in addition to physical injuries, financial costs is imposed on the patients and the whole health care system and as various studies indicate a positive and effective role of screening for the characterization of some
cancers (breast, prostate, etc.) and as a result increase the survival rate of patients and reduce the mortality, Therefore, according to lack of planning to prepare this type of cancer screening, it is important to remind to health and treatment officials and trying to implement a screening program is necessary. In addition, efforts to reform the pattern of life (increased mobility, using high-fiber and low-calorie foods, avoid smoking and tobacco, etc.) and thus prevent these diseases can be a major contribution in reducing the number of patients and as a result with reduction the costs of health, this money will be spent in other health areas.

REFERENCES