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Cancer Incidence in South East of Iran: Results of a Population-Based Cancer Registry.

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Abstract:

Introduction: suitable information of different cancers in special geographic areas can help define medical programs for treatment and screening of high-risk groups.
Aims and Methods: The aim of this study is to present the frequency of cancers in Hospitals of the Zahedan. A comprehensive search was undertaken to survey and register all cases of cancer r during a 4-year (2003-2006) period among the indigenous population of Zahedan. Diagnosis of cancer was based on histopathology, clinical or radiological findings, and death certificates. From these analyses, the general and specific frequencies by age and by sex were obtained for the different group of neoplasms. Also, the frequency of the stage of the disease that had been diagnosed in cases with solid tumors was obtained.
Results: A total of 1452 patients with cancers (mean age 51‡19 years) were found during the study. Of these, 841(58%) were in males. Gastrointestinal cancers were the most common tumors with a frequency 30%. In upper gastrointestinal cancers, Esophagus cancer was the most common (26 %), followed by stomach malignancies (22%), colorectal (20 %), liver (15 %). Hematological malignancies were second common malignancies in Zahedan with a frequency of 20%. In Hematological Malignancies ALL was the most common (28.44%). The top 5 cancers in males (excluding skin cancer) according to the calculated ASR(age standard rate) were esophagus, stomach, leukemia, colon and rectum and bladder; in females, these were stomach, esophagus, breast, colon and rectum and lung and bronchus. In the child population the most common tumors were Acute lymphocytic leukemia, lymphoma and bone.

Conclusion: Hematological malignancies alone constitutes one-fifth of all cancers in Zahedan, with the highest ASR incidence rate reported from Iran up to now, and one of the highest in the world. The principals cancers in the patients treated in Hospitals of Zahedan were esophagus cancer, gastric cancer, Leukemia, and breast cancer consistent with those reported by other place. In this population Leukemia had a very high incidence. This fact will need to be confirmed by a longer period of observation, but even now the total number of cases (particularly Leukemia) is high when compared with the data of other Leukemia registries which give rates for longer period and for similar or larger population.

Keywords: Cancer incidence, Zahedan, Iran

Introduction:

In recent years the causes of human morbidity and mortality have been changed from infectious to non communicable diseases and cancer has been known as the third major cause of mortality in Iran after the cardiovascular disease and accidents.[1] So cancer is an important priority of health system researches.

In recent decades different groups have studied the prevalence of cancer in different part of Iran. One of these first groups was established in 1969 by joint collaboration of the institute of public health research (IPHR) of Tehran University of Medical Sciences (TUMS) and the International Academy for Cancer Research (IARC).[2, 3, 4] Similar studies have been conducted in Ardabil (Northwest) and Kerman provinces (south of Iran) by Digestive Disorders Research Center (DDRC) of TUMS.[5] According to these studies results there is high incidence of esophageal cancer in Iran and our country is the most common site of esophageal cancer in the world.[6, 7] In an unreported study of Zahedan, esophagus cancer was found to be the most common cause of mortality due to the cancers and leukemia is high incidence in this region.

The prevalence of esophageal cancer in western countries has remained stable [8] but the incidence of non-cardiac gastric cancer is reducing.[9] Although the incidence of mortality and morbidity in a country can review the prevalence of cancer but, it can not show the incidence of various cancers in different geographic area. Cancer registry system is able to show the exact incidence of cancers in an especial geographic region which is necessary for health programs planning by Ministry of Health, Treatment and Medical Education. The aim of the present study was to investigate the incidence of various cancers in Zahedan (South-East of Iran) based on cancer registry system data.

Materials and Methods:

The data was collected from hospital records, radiology and pathology clinics, and laboratories. Copies of patient's documents were obtained. Some patients may refer to other medical centers out of the province such as Tehran. We tried to collect the information about these cases from private offices.

The 4-year data (from 2003-2006) was gathered in central office and coded using the international calcification for disease for oncology (ICD-O).[10]

The information about individual characteristic and demography, death cause, cancer type and residential place in recent 10 years was completed in a questionnaire and arranged alphabetically. The repeated cases were omitted.

Cases were divided in 10 years age groups.

The data entered the computer using SPSS (Chicago, IL) software version 11.5 and MS Excel (Microsoft, Redmond, WA) software with Persian fonts. We calculated person-years of the at risk population using each year method. Crude incidence rate of cancers were calculated in various age groups and both sexes in 100.000 populations. World standardized rate (ASR) per 100.000 person- years was calculated using the direct method of standardization to the world population.[11] ASR is the cancer incidence rate between two groups in the same time or in different time in various geographic sites. This type of statistics limits the evaluation of difference between younger and older population. We assessed the study population using world standard population.[11]

Results:

In a 4-year period from 2003-2006, 1502 cases were registered in Zahedan. Complete and exact information was present in 1452 cases (96%) that were registered as new cases of cancer. Of the registered cases 841 (58%) were males and 611 (42%) were females. Mean age of patients at first diagnosis was 51‡19 years yr. Tables 1 and 2 show the principle cancer sites, 10-year age specific incidence rates, mean annual incidence, crude rate of cancers and ASR for men and women. Cancer diagnosis was based on histopathology in 91% of cases, death registry in 1% and other clinical and paraclinical methods in 8% of cases.

According to ASR, 5 top cancers were esophagus, breast, Acute Leukemia, stomach, and Non Hodgkin Lymphoma, respectively. Gastrointestinal cancers were the most common tumors with a frequency 30%. In upper gastrointestinal cancers, Esophagus cancer was the most common (26 %), followed by stomach malignancies (22%), colorectal (20 %), liver (15 %). Five most common cancers in men were: stomach, leukemia, esophagus and colon. Also five most common cancers in women were: breast, stomach, uterus and ovary, colon, esophagus. Hematological malignancies were second common malignancies in Zahedan with a frequency of 20%. In Hematological Malignancies ALL was the most common (28.44%). In the child population the most common tumors were Acute lymphocytic leukemia and bone.

Table 1: Prevalence of all cancer

Primary Site	Ali Ebne Abitaleb Hospital	Khatam Al Anbia Hospital Nabi Akram Hospital(21) Tamin ejtemaei Hospital(43) Zabol Hospitals (65)
All Sites(1452)	686	766
Oral cavity and pharynx (36)	10	26
Digestive system(450)	203	247
Esophagus(118)	46	72

Stomach(100)	49	51
Small intestine(16)	4	12
Colon / Rectum(94)	39	55
Gallbladder(15)	7	8
Liver(70)	39	31
Pancreas(14)	11	3
Spleen(3)	0	3
Other digestive organs(20)	8	12
Respiratory system(88)	42	46
Lung and bronchus(70)	37	33
Larynx(8)	0	8
Pleura(10)	5	5
Thymus(6)	1	5
Breast(119)	39	80
female Genital system(40)	24	16
Uterine corpus(7)	2	5
Uterine cervix(7)	5	2
Ovary(26)	17	9
male Genital system(47)	14	33
Prostate(38)	9	29
Testis(9)	5	4
Urinary system(77)	17	60
Urinary bladder(65)	14	51
Kidney and renal pelvis(11)	3	8
Ureter and other urinary organs(1)	0	1
Eye and orbit(12)	0	12
Brain and other nervous system(26)	11	15
Endocrine system(60)	23	37
Thyroid(49)	17	32
Parathyroid(5)	0	5
Adrenal gland(6)	6	0
Lymphatic system(127)	58	69
Hodgkin's disease(26)	13	13
Non–Hodgkin's lymphoma(101)	45	56
Blood & Bone Marrow(298)	202	96
AML(81)	48	34
ALL(128)	101	27
CML(18)	13	5
CLL(13)	6	7
Multiple myeloma(43)	26	17
Other leukemia(14)	8	6
Bone & Cartilage & unspecified primary site (65)	42	23

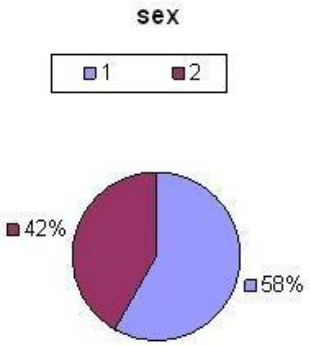


Table 2: age & cancer

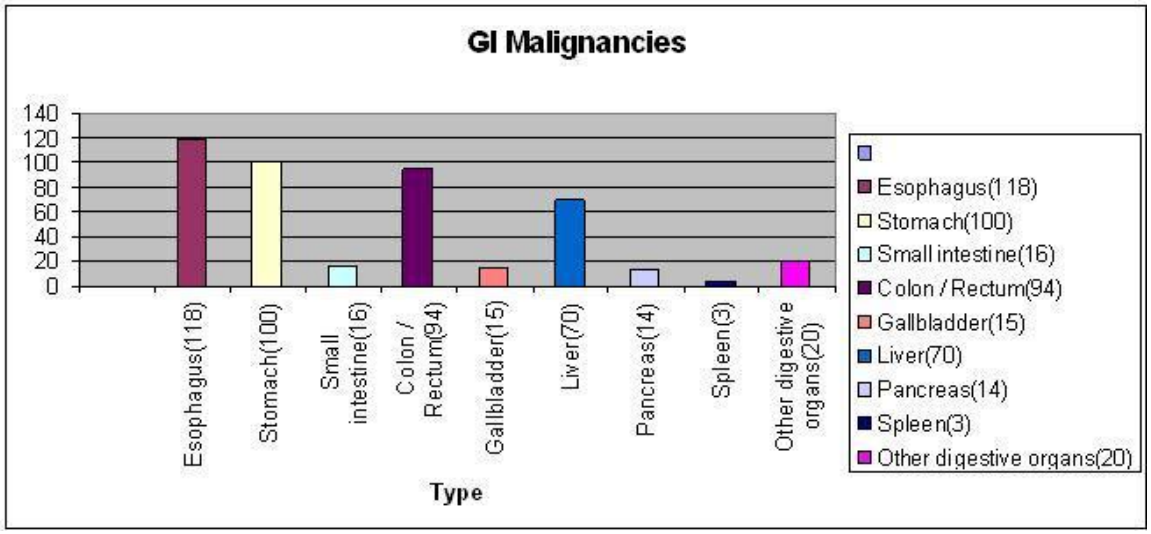
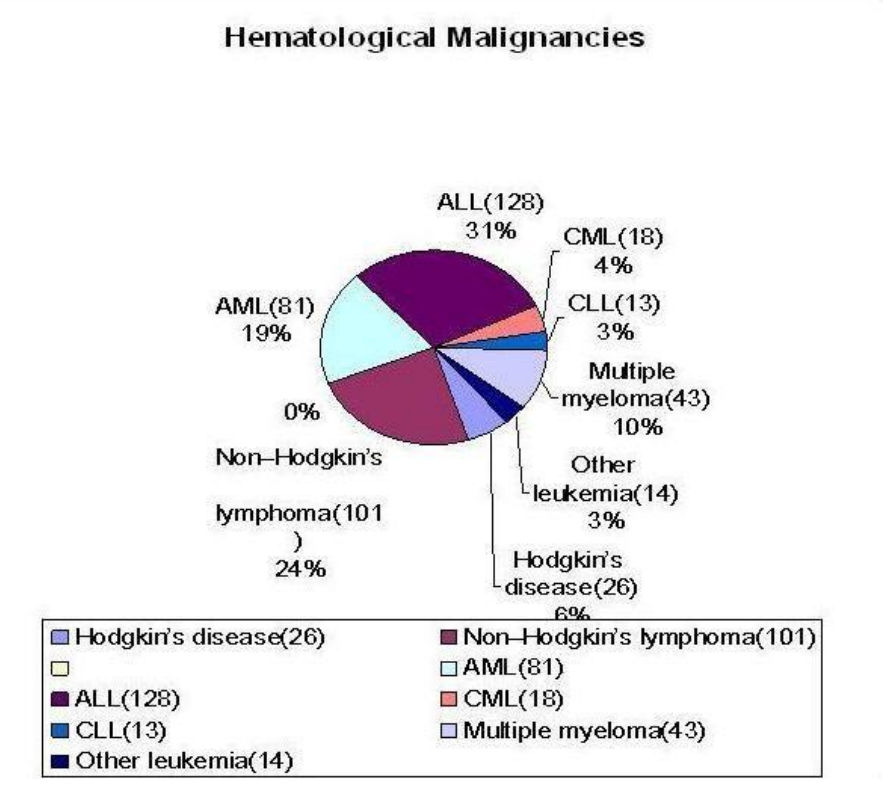


Table 3: Number of every Cancer



Discussion Table 4: Number & Percentage of Hematologic malignancy

Various epidemiologic studies have been performed about cancers in developed and developing countries which their results can be found in the report of IARC as "Globocan" report.[12, 13] In this study we report the prevalence of different cancers in a region in the south-east of Iran. Considering the results and ASR reported rate and comparing with other studies our results are different. Some results of these studies in different continents are as follow: Polinzi, French: 209 in women and 186 in men [14]; Karachi: Pakistan, 132.4 in men and 133 in women [21]; Ardabil, 132 in men and 96 in women [5], overall the estimated value in Iran is 116.8 [7], Gambia 61 in men and 55 in women.[16] and in our study(Zahedan Cancer Registry) 70 in men, 50.9 in women and 121 overall .The first information about cancer incidence in Iran was reported in 1970 from the study of Caspian Sea area in 1968-1972. In that study ASR was 71.9 for men and 45 for women and esophageal cancer was the most common cancer, in our study prevalence of esophageal cancer has increased and gastric cancer decreased.

In our study ASR for some cancers is similar to other Asian and European countries. But Hematological malignancies constitutes one-fifth of all cancers in Zahedan, with the highest ASR incidence rate reported from Iran up to now. In the present study, esophagus cancer was the most common cancer.

ASR for esophagus cancer in our study was 9.8 in men, and in other countries was a follow: Italy 44, French 25, Scotland 28, Island 34, Holland 26, Switzerland 20.7, Denmark 5.8 [17] and also it has been reported form south of Iran as follow: Fars province 5.5, Khuzestan 0.3, Kerman 10, Ardabil 49.1.[5] These results show similar incidence of gastric cancer in these area with Europe high risk area such as Italy and Island. In first cancer registry study in Iran, 30 years ago, in Caspian Sea area esophageal cancer was reported as the most common cancer in that area [18] and in the last one in Ardabil (northwest of Iran) gastric cancer was the most common cancer.[5]

In our study gastrointestinal (GI) cancers only included 30% of all cancers which of them 26% are esophageal cancers, 22% gastric cancers, colon cancers 20%, and 15% liver cancers that have changed significantly from the first study (30 years ago). This change may be due to modification of data collection method or larger sample size. In the first study [18] the histopathological diagnosis has been performed in only 27% of cases but in our study histopathological diagnosis was made in 91% of cases. Zahedan has been located in east of Pakistan which is one of the most common area of esophageal cancer in the Asia. In our study also the highest prevalence of esophageal cancer has been reported in eastern part of Sistan & balouchistan, near Pakistan. In present study lung cancer, the most common cancer in most countries was in 8th order level.

High prevalence of esophagus cancer may be due to usage of Paan and Naus (tobacco), genetic factors, diet and environmental factors.

Low incidence of lung cancers shows that cigarette smoking can not be a risk factor of gastric cancer, because if the smoking is a risk factor then the prevalence of

lung cancer should be reported high. Low prevalence of lung cancer is also reported in Ardabil and Semnan study. In the study of Union European countries except cutaneous cancers, the most common cancers in men were as follow: lung 21%, large intestine 13%, prostate 12%, urinary bladder 7% and gastric cancer 7% and in women was as follow: breast cancer 28%, colorectal cancer 15%, lung 6%, uterus 5% and gastric cancer 5%. Also prevalence of cancers in west Europe was more than east.[19]

Our results is similar to Globocan 2002 considering that Globocan data is based on hospital reports and estimation but our results are based on normal population study and it is more valid.

According to IARC report overall incidence of all tumors in more than 65 years was 2158/100000 in men and 1192/ 100000 in women which is 7 times and 4 times of tumor incidence in below 65 year, respectively.[20] Cancer incidence in men and women is similar before 50 year old and after that it increases more in men than women and it reaches to 884 in men and 544 in women. In other words cancer incidence is more in older men than older women.

According to IARC study annual incidence of cancer in men are as follow: prostate cancer 451/100,000, lung cancer 449/100,000, colon cancer, 176/100,000, and in women with more than 65 year old was as follow: breast cancer 548/ 100,000, colon cancer 133/100,000, and lung cancer 118/ 100,000 which contains 48% of all tumors of old people. In our study these results were as follow in men: gastric cancer 64/100,000, esophageal cancer 68/100,000, and lung cancer 50/100,000 and colorectal cancers 41/100,000,and in women; gastric cancer 32/100,000, breast cancer 119/100,000 and esophageal cancer 64/100,000,and lung cancer 21/100,000, and colorectal cancers 53/100,000.

As common cancers according to our results are the cancers that early diagnosis of them is possible using screening methods such as colonoscopy, esophagogastroduodenoscopy, mammography and others, routine request of these paraclinical studies may be recommendable in more than 50 year old people.

In this study we report the incidence rate of cancers in a south-east part of Iran. The study has high validity considering accuracy and homogeneity of population, documents and the project team and the results is useful for future health care and research planning for prevention and control of cancers in this area.

Information about the incidence of tumors is necessary for health care planning. By having complete information about the tumors in each area we can evaluate the number of required hospital beds or patients who need chemotherapy or radiotherapy or oncology department. Also by having the information about incidence rate we can identify the mortality and morbidity rate and by magnification of one or more especial tumors we can describe it as a problem in a region.

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