

Prevalence of stomach cancer in Shiraz, Southern Iran

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Background: Worldwide, cancer of stomach is still the fourth common cancer and the second cause of mortality among all cancers affecting annually 870,000 subjects. This study aims to determine the frequency and the characteristics of gastric cancer in southern Iran. **Materials and Methods:** 10,800 of all cancers registered in Fars Hospital-based Cancer Registry were surveyed among which 574 cases were gastric cancer in both genders and all age groups. From January 2002 to December 2007, all hospital-based data were recorded according to International Classification of Disease for Oncology (ICD-O) and registered cases included all invasive cancers in ICD-10 categories of C-00 to C-80 and all duplicate cases were eliminated. **Results:** Among all registered cancers, there were 574 cases of gastric cancer including 69.3% males. The mean age of patients was 58.1 ± 14.8 years, 25.4% with a history of in their first relatives and most of them were smokers (50.9%) and from low socioeconomic class (45.5%). Metastasis was visible in 182 patients and majority of them underwent surgery (64.3%). The majority of gastric cancer patients were older than 50 years, smokers, low socioeconomic class, and female in favor of adenocarcinoma. **Conclusion:** Our results showed that in our area, treatment programs and health plans should focus on men, patients older than 50 years and with adenocarcinoma, smokers, and those in a low income level.

Key words: Epidemiology, Iran, prevalence, stomach cancer

INTRODUCTION

Worldwide, cancer of stomach is still the fourth common cancer and the second cause of mortality among all cancers affecting annually 870,000 subjects^[1] and is anticipated to compromise 1.8% of all deaths and the 11th cause of death till 2030.^[2] In Iran, it constitutes 22% of all cancer mortalities with an annual report of 5000 cases.^[2] It was shown as the second common cancer in males (14%) and the fourth in females (7%) and is more common in northwestern parts of the country and the territories of the Caspian Sea.^[3] In Fars Province, southern Iran, Mehrabani *et al.* (2008) reported it as the second common cancer in males (ASR = 3.82) and the sixth in females (ASR = 1.60).^[4] This active hospital-based study was performed to determine the frequency and the characteristics of gastric cancer in southern Iran from 2002 to 2007.

MATERIALS AND METHODS

In a retrospective study from January 2002 to December 2007, all hospital-based information of Fars Cancer Registry affiliated to Shiraz University of Medical Sciences on cancer of stomach was collected. The Fars Hospital-based Cancer Registry is the major referral center in southern Iran due to its equipped hospitals,

and specialists in different fields of cancer. Data were recorded according to International Classification of Disease for Oncology (ICD-O)^[5] and registered cases included all invasive cancers in ICD-10 categories of C-00 to C-80 and all duplicate cases were eliminated. The personnel interviewed the patients to get all the information face-to-face. Information on other variables was coded as advised by IARC.^[6]

The histologic types were recorded from the pathology reports according to the ICD-O. Although a number of classifications for gastric carcinoma have been published,^[7] we focused on the Lauren classification.^[8] In previous reports, there are two diagnostic codes for the diffuse type of gastric carcinoma that correspond to the Lauren classification. They include signet ring cell carcinoma (M8490) and diffuse carcinoma (M8145). Diffuse carcinoma can refer to several types, including small cell or poorly differentiated types that diffusely infiltrate the wall of the stomach. In this article, the term diffuse type refers to the combination of these codes.

The intestinal type included all cases recorded as carcinoma, not otherwise specified (NOS); adenocarcinoma, NOS; tubular; and intestinal type (M8010, M8140, M8211, and M8144, respectively). Other tumor types, such as non-Hodgkin's lymphoma (M9591/3), gastrointestinal

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stromal tumor (M8935/1), and carcinoid tumor (M8240/3) were also included.

RESULTS

Among 10,800 of all cancers registered during these 6 years, there were 574 cases of gastric cancer including 398 males (69.3%) and 176 females (30.7%). The male to female ratio was 2:2.6. The frequency of gastric cancer in different age groups was shown in Table 1 while the lowest and highest rates were noticed in the age group of <35 years and 65-75 years, respectively.

The mean age of patients was 58.1 ± 14.8 years [Table 1]. Two hundred and one subjects (35%) had previous history of smoking for at least three cigarettes per day, 40 (7%) were opium dependent, and 91 (15.9%) smoked water-pipe. Thirteen (2.2%) patients had a high income (more than 1000 US\$/month), 300 (52.3%) a moderate (between 350 and 900 US\$/month), and 261 (45.5%) a low income (less than 350 US\$/month). 25.4% of patients had reported the history of gastric cancer in their first relatives. About 92% (526 cases) of all the 574 gastric tumors were adenocarcinoma (intestinal type = 83%, diffuse type = 9%); non-Hodgkin's lymphoma (5%); gastrointestinal stromal tumor (2.5%), and carcinoid tumors which were less common (0.5%).

Metastasis was noticed among 182 patients in different tissues including 90 (49.5%) in lymphatic system, 40 (22%) in liver, 6 (3.3%) in bones, 3 (1.6%) in brain and 20 (11%) in other organs. The history of therapeutic measures showed that the majority of patients underwent surgery (64.3%).

DISCUSSION

Studies on cancer epidemiology in developing countries such as Iran are limited by the dearth of tools for disease control and surveillance.^[9] Cancer of stomach was the seventh among the 10 common cancers in males in Iran in 1985^[10] but now is the second common cancer in males in southern Iran. The results showed that the incidence of cancer has changed in our area. Sajadi *et al.* noticed that cancer of stomach was the first common cancer in males (ASR = 49.13) and females (ASR = 25.42) in Iran.^[9] Mehrabani *et al.* reported these figures in Fars Province to be 3.82 and 1.60, respectively.^[3] The results of this study

showed a higher rate in males (ratio of 2.26) which is similar to other studies.^[11-15] In Khuzestan Province, southwestern Iran, the ratio was 2.6,^[16] and in Tehran it was 3,^[17] which all show a higher rate in males.

The presence of a qualified cancer registry center in Fars Province with equipped hospitals having several specialists and subspecialists and a good system of cancer recording may help to record cancers which were ignored or underestimated in previous studies in this region. The differences may also be related to techniques used to diagnose cancers more accurately and in the size of population studied. Other explanations could be changes in the life style, shifting from the rural toward the urban areas, which has taken place over the past 25 years after Islamic revolution. Barekat *et al.* demonstrated that variations may be related to environmental or racial factors and the lifestyle can also have an important role for these differences. More studies need to be carried out on cancer of stomach in our area.^[18]

Our results showed that the mean age of patients was 58.1 years and the majority were older than 50 years which is similar to other studies.^[12,17-19] Our results also indicates to a decrease in the age of patients affected by cancer of stomach demonstrating that 19.5% of patients were less than 44 years while in Tehran study, the majority of patients were less than 50 years.^[17]

We noticed that 79% of patients were in the moderate and low economical level confirming a more prevalence in low income population which was also confirmed in several other studies.^[11,17,18,20] As gastric stomach has correlation with poor diet,^[11,12,19,21,22] the cancer is more prevalent in poor people. Our results were in favor of the prevalence of stomach cancer to be more in smoker patients (35%) similar to several studies which showed that the prevalence of stomach cancer in relation to smoking was dependent on the frequency of smoking.^[11,18,23-25]

In our study, 50.1% of subjects were smokers and 7% opium dependent. Tabei *et al.* in a hospital survey of 177 gastric cancer patients aged 24 years and more in southern Iran noticed that 50.9% of patients were tobacco dependent and 5.7% opioid dependent which shows the similarity of the results.^[26]

About 92% of all gastric tumors were adenocarcinoma (both intestinal and diffuse type) and non-Hodgkin's lymphoma. Gastrointestinal stromal tumor and carcinoid were less common. Several reports showed that the intestinal type was the most common type,^[14,15] and Wu *et al.* in the United States demonstrated that both diffuse and intestinal rates were lowest among whites, intermediate among blacks, and

Table 1: The frequency of gastric cancer in different age groups

		Age groups (years)											
		<35		36-44		45-54		55-64		65-75		>75	
No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
51	8.9	61	10.6	119	20.7	116	20.2	159	27.7	68	11.7		

highest among the other, primarily Asian, races, with only modest gender differences for the diffuse type.^[27,28]

As the majority of patients were older than 50 years and in favor of more prevalence in smokers and poor people and for adenocarcinoma, it seems that this report provides useful information for health and therapeutic planning. Men were also at a higher risk than women. So treatment programs should focus on patients older than 50 years who are smokers and in a low socioeconomic level.

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