Clinicopathological Features of Gastric Cancer: A Study Based on Cancer Registry Data

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Abstract

Aim: To analysis the epidemiological and clinopathological aspects of gastric cancer.

Methods: We retrospectively studied the characteristics of 752 gastric carcinoma patients registered in cancer registry center of Taleghani hospital from 2001 to 2006. All the patients confirmed gastric cancer histopathologically. Univariate methods (Mann-Whitney U-test, and chi-square) were used for analysis.

Results: Among 752 cases, 535 (71.1%) were male. Sex ratio (male: female) was 2.49:1. The mean age of the patients was 59.7 years (SD = 12.9) at the time of the diagnosis. Weight loss, as a frequent symptom at the time of diagnosis, was observed in 57.7% of the cases. Most of the patients were diagnosed with advanced pathologic stage. In addition, tumor grading was poorly differentiated in most cases (28.7%) ; and in 49.9% of the patients, the tumors were located in the stomach, NOS ; and distant metastasis was observed in 24.6% of the cases.

Conclusions: Based on the results, earlier detection in younger ages and in primary stages of tumor, and subsequent higher quality care to cure GC and increase patients' life expectancy are recommended.

Keywords: gastric cancer, clinicopathologic, Iran

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Introduction

Cancers are major health problems in many countries throughout the world. According to the International Agency for Research on Cancer, the world estimate of cancer incidence in the year 2002, gastric cancer (GC) is still one of the most common cancers in the world, and is the fourth most commonly occurring cancer (9% of all cancers) after lung, breast, and colorectal cancers. In addition, it is the second most common cancer related cause of death (10% of all cancer deaths) after lung cancer. In 2002, the incidence of GC was estimated to be 934,000 cases; 56% of the new cases were derived from Eastern Asia, 41% from China, and 11% from Japan. On the whole, 65%–70% of the incident cases and deaths from GC are occurring in less developed countries [1]. Despite its decreasing trend over many decades, GC remains a major public health problem in the world [2,3].

GC is the most common malignancy in Iran [4]. In recent years, cancer morbidity and mortality increased in Iran, and GC is ordered second among all cancers in this country [5].

In this review, recent epidemiological findings on GC in Iran are discussed to provide an up to date perspective.

Material and Methods

This survey is a retrospective study that was conducted on 752 GC patients who registered in Cancer Registry Center of Taleghani hospital, Tehran, Iran (2001-2006). All patients with confirmed GC on the basis of pathology report were entered to the study. These patients had at least one of the following procedures in our hospital: diagnosis, surgery or other treatment and surveillance. The data included demographic, medical history and diagnosis information that were derived from our Cancer Registry data base. Tumor staging in each patient was based on pathological information. The staging was made in accordance with the TNM classification.

Data analysis was performed by descriptive and univariate methods (Mann-Whitney U- test, Chi-square). The computer software STATA (version 8.0) was used for all calculations. $P<0.05$ was considered as statistically significant.

Results

The mean age of the patients at diagnosis was 59.7 years (SD=12.9, range 20–88, median 61 years). Among 752 cases, 535 (71.1%) were male and 217 (28.9%) were female and sex ratio (male: female) was 2.49:1. The mean age of males at

diagnosis was significantly greater than females (60.5 vs. 57.5 years, P<0.05). 717 cases (95.3%) were married.

The level of education in our study was relatively low: 49.1% of the patients were illiterate or had primary education and only 8.8% had graduate education. Ethnicity considered, 33.2% was Fars and 30.7% were Turk (Table1).

Of the 752 patients, 181 (24.1%) had a family history of cancer in their first or second degree relatives; of them 45(6%) had a family history of GC. There was significant differences between males and females regarding family history of cancer and this family history was more in men compared to women (p<0.05).

Six percent of patients had a history of alcohol consumption, 20.2% were current smokers and 13.6% were previous users.

The most common histologic type of tumor (71%) was adenocarcinoma, NOS (Not Otherwise Specified), followed by adenocarcinoma intestinal type, carcinoma, NOS and signet ring cell carcinoma. The mean size of tumor was 56.9±39 mm. No significant difference was observed between males and females regarding the histologic type and tumor size of cancer (P>0.05).

We investigated the tumor distribution by anatomic sites. In 49.9% of the patients, the tumors were located in the stomach, NOS (Table 2). Moreover, tumor grading was poorly differentiated in most cases (73.0%) and there were no significant differences between males and females (P>0.05). In 262 (45.9%) of the patients, tumor penetrated serosa without invasion of adjacent structures (T3); and tumor invaded adjacent structures in 38.7% of the patients (T4). There was metastasis in 7 to 15 regional lymph nodes in 263 of the cases,; moreover distant metastasis was observed in 36.4% of the cases (Table1).

Likewise, the disease stage at diagnosis (33.8 %) was stage IV followed by IIIA, II, and IIIB stages in most patients (Figure1). On the other hand, most patients were diagnosed with advanced pathologic stage.

The most common symptoms in patients at diagnosis were: weight loss (57.7%), abdominal pain (56.6%), nausea (43.2%) and ulcer type pain (36.4%) (Figure2).

Table 1: *Demographic and Clinopathologic characteristics of patients with GC*

Variable	Subgroup	n(%)
Age at diagnosis(years) (n=752)	<50	186(24.7)
	51-60	182(24.2)
	>61	384(51.1)
Sex(n=752)	Male	535(71.1)
	Female	217(28.9)
Marital status(n=748)	Married	717(95.9)
	Other	31(4.1)
Education(n=548)	Illiterate	269(49.1)
	Lower Diploma	231(42.1)
	Upper Diploma	48(8.8)
Ethnicity(n=739)	Fars	245(33.2)
	Kord	103(13.9)
	Turk	227(30.7)
	Other	164(22.8)
Occupation(n=636)	Retired/Employee	191(30.1)
	Housekeeper	181(28.5)
	Worker	34(5.3)
	Farmer	142(22.3)
	Other	88(13.8)
Pathologic primary tumor(Pt) (n=571)	T1	19(3.3)
	T2	69(12.1)
	T3	262(45.9)
	T4	221(38.7)
Pathologic Regional Lymph Nodes(Pn)(n=752)	N0	292(38.8)
	N1	131(17.4)
	N2	263(35.0)
	N3	66(8.8)
Pathologic Distant Metastasis	M0	324(63.6)
	M1	185(36.4)
Tumor grading (n=472)	Well	113(23.9)
	Moderately	142(30.1)
	Poorly	203(43.0)
	Undifferentiated	14(3.0)

Discussion

The pattern and incidence of GC vary widely in different parts of the world [6-8]. The epidemiologic features of GC have been studied in Japan and the Western world [9-11]; however, only a few reports from the less developed countries have been published [12-14]. Moreover, there is an absence of good epidemiologic information about GC from the Middle Eastern countries like Iran.

Previous reports indicated that GC is one of the most common malignancies in Iran. In our series, the peak incidence of GC was in ages older than 60(51.1%), and the mean age of the whole group was 59.7 years. We also found a male predominance of about (male: female) 2.5:1 (535 vs. 217); and these results are compatible with other reports [6,15-17]. The causes of this sex preponderance are not yet obvious. Presumably, males have more frequent and longer exposure to environmental carcinogens than females; and such exposure can be an important cause of male prominence [18]. On the other hand, several studies have demonstrated that the presence of estrogen

Table 2: *Distribution of tumor site in GC patients*

Tumor site	n	%
Cardia,NOS*	117	15.6
Fundus of stomach	15	2.0
Body of stomach	35	4.7
Gastric antrum	71	9.4
Pylorus	24	3.2
Lesser curvature of stomach, NOS	71	9.4
Greater curvature of stomach, NOS	28	3.7
Stomach, NOS*	375	49.9

*NOS: Not Otherwise Specified

receptor is associated with poorer prognosis in patients with gastric cancer [19].

In addition, 22% of the patients smoked and 6% drank alcohol; and this was consistent with other studies [4].

In our study, 6% of our patients reported a positive family history of gastric cancer in first/second degree relatives. Another study [20] reported that a family history of gastric cancer was found in 15.4% of the young patients. In one Iranian study, 17 % of the patients had a history of GC in their relatives [4]. Our estimate, however, is lower than other studies ; and this may be due to the fact that information on family history was self reported, and it may also be possible that patients may tend to recall a family history of gastric cancer in their relatives more frequently.

Considering the histological type, we found that adenocarcinoma, NOS, was most common (71.0%) in patients under the study. Other studies have reported the same results [21]. The high percentage of NOS in present study may be the result of defect in pathology reports.

Our founding reveals that 43.0% of the patients have a poorly differentiated grade at the time of diagnosis and only 23.9% of the study group had a well differentiated grade. These results are close to the results of previous researchers [23-26]. Nakamura et al. [22] analyzed the pathology and prognosis of gastric cancer and they found that 45.5% of early gastric carcinomas were well-differentiated adenocarcinomas followed by moderately-differentiated (17.4%) and poorly-differentiated (37.1%). In that study, the most common histological type was poorly differentiated adenocarcinoma in advanced lesions.

With regards to depth of invasion, approximately more than two-thirds of the patients under the study were diagnosed with advanced GC. Kim et al. [19] reported that 80.3% of young patients had advanced carcinoma, but the percentage of early gastric carcinoma was higher in the young patients compared with the old patients (19.7% vs 13.8%).

The most symptoms observed in patients at the time of diagnosis were: weight loss (57.7%), followed by abdominal pain (56.6%) and nausea (43.2%). In a survey in Khuzestan, Iran, the commonest symptoms of patients was abdominal pain and weight loss [4].

We don't have access to information on H pylori in the patients under the study, whereas the incidence of H pylori infection is relatively high [27].

Conclusion

According to the results, most patients are in the advanced stages of GC, which favors a poor survival. Therefore, comprehensive Study of etiology and risk factors associated with this cancer in Iran, earlier detection in younger ages and in primary stages of tumor and subsequent higher quality care to cure GC and increase patients' life expectancy are recommended. In addition, weight loss, abdominal pain and nausea in elderly could be considered as alarm symptoms for GC diagnosis.

Figure 1- Frequency of pathologic stage of gastric cancer

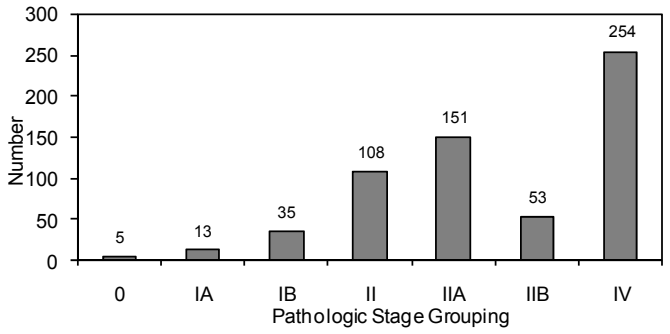
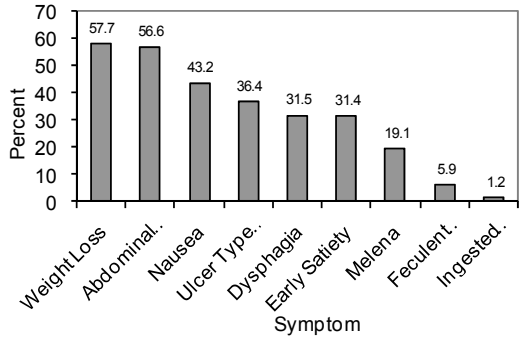


Figure 2- Most symptom in gastric cancer patients



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