

Anatomicopathological Distribution of Gastric Cancer over Ten Years

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ABSTRACT

Background:

Gastric cancer is the fourth most common cancer and the second cause of cancer-related death worldwide. Various types of gastric cancer are common in different areas in Iran. In this study, we aimed to evaluate 10 years of endoscopic and histopathological data of patients diagnosed with gastric cancer in Babol, Iran.

Materials and Methods:

This descriptive cross-sectional study included all patients with recorded data who were referred to the endoscopic unit with gastric cancer during 2006-2016. Data included demographic characteristics (age, sex, body mass index [BMI], smoking, opium addiction), endoscopic characteristics (site of involvement in different gastric areas), and histopathological types (adenocarcinoma, lymphoma, gastrointestinal stromal tumor (GIST)), which were extracted from the endoscopy unit database and were analyzed using SPSS software.

Results:

435 cases of gastric cancer were studied. The mean age was 66.75 ± 14.03 years, with a minimum and maximum age of 21 and 94 years, respectively. The data demonstrated that men were affected 2.3 times more than women (69.2% were men and 30.8% were women). 420 out of 435 patients were diagnosed with adenocarcinoma. Also, 46 cases (or 10.9%) were signet ring adenocarcinoma, and 374 cases (89.1%) were non-signet ring adenocarcinoma. Eight cases were lymphoma, and seven cases were GIST. In addition, 112 patients (25.8%) had proximal, and 323 patients (74.2%) had distal involvements, mostly involving the antrum (36.8%). Regarding the effects of cigarette smoking and opium addiction, 124 patients diagnosed with gastric cancer were investigated. 13 patients (10.4%) had a history of smoking. Also, five patients (4%) had a history of opium addiction. Three patients (2.2%) had a history of both.

Conclusion:

In our study, non-cardiac intestinal type adenocarcinoma was more prevalent than cardiac type.

Keywords: Stomach neoplasms; Endoscopy; Pathology; Demography

Please cite this paper as:

Ranaei M, Sarli S, Rouhi T, Arefisigaroudi N, Shokri-shirvani J. Anatomicopathological distribution of gastric cancer over ten years. *Govareh* 2022;27:35-38.

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Received: 13 Nov. 2021

Edited: 28 Feb. 2022

Accepted: 29 Feb. 2022

INTRODUCTION

Cancer is the second leading cause of mortality after heart disease (1). Gastric cancer is the fourth most common cause of cancer worldwide and the second leading cause of death in Iran. Two factors that play the most critical role in gastric cancer are *helicobacter pylori* (*H. pylori*) infection and diet (2). Anatomically, gastric carcinoma is more common in the distal region. According to recent research in the U.S., 37% of gastric carcinomas have been reported from the upper third, 20% from the middle third, and 30% from the lower third. Also, 12% of the cases were affected in the entire stomach (2).

Histologically, intestinal-type adenocarcinoma has been diagnosed more in men and older age groups (3). Chronic atrophic gastritis plays an important role in the development of the intestinal-type adenocarcinoma (4). Intestinal metaplasia and dysplasia are also considered to be gastric cancer warning lesions (5). *H. pylori* infection can also lead to gastric cancer by progressing gastric atrophy and intestinal metaplasia (6).

Geographically, about two-thirds of gastric cancer cases occur in less developed areas. The highest prevalence rates are in Japan, China, Korea, Central and South America, Eastern Europe, and the Middle East. In contrast, the lowest prevalence is in North America, Australia, New Zealand, Northern Europe, and India (7). Gastric cancer is more common among men in both developed and developing countries (8). Also, it has decreased in recent decades. Part of the decline may be due to the recognition of most critical risk factors such as *H. pylori* and environmental risk factors (9). The clinical signs and symptoms of gastric cancer are not discovered during the early stages, so patients usually start medical diagnostic procedures when they have reached the advanced stages (10).

The early detection of gastric cancer is crucial. Therefore, if there is any doubt in the diagnosis, a detailed history and endoscopic examination of the stomach are essential for tumor localization and biopsy (11). The purpose of this study was to evaluate the endoscopic, pathological, and demographic characteristics of patients with gastric cancer over a period of 10 years in Ayatollah Rouhani and Shahid Beheshti Hospitals, Babol, Iran.

MATERIALS AND METHODS

In this descriptive cross-sectional study, the records of all patients with gastric cancer referred to the endoscopy unit of Ayatollah Rouhani and Shahid Beheshti Hospitals during 2006-2016 were investigated. The information, including demographic characteristics (age, sex, body mass index [BMI], and smoking and opium addiction status) and endoscopic features (the affected parts of the stomach), and histologic types (adenocarcinoma, lymphoma, and GIST), were extracted from the database of endoscopy and pathology units. Then, SPSS software v25 was used for the statistical analysis of the data.

RESULTS

Among patients who underwent endoscopy at both Shahid Beheshti and Ayatollah Rouhani Hospitals, 435 cases were diagnosed with gastric cancer over ten years. The mean age of these patients was 66.75 ± 14.03 years, with a minimum age of 21 years and maximum age of 94 years. The incidence of the disease in male patients was 2.3 times more than in females (69.2% in men and 30.8% in women).

Out of 435 cases, 420 patients had gastric adenocarcinoma, of which 46 cases (10.9%) were signet ring adenocarcinoma, and 374 cases (89.1%) were non-signet ring adenocarcinoma. Eight cases of lymphoma and seven cases of GIST were reported. 112 patients (25.8%) had proximal involvement, and 323 patients (74.2%) had distal involvement.

In terms of location, cardia tumor was reported in 23%, body and large curvature in 28.5%, small curvature in 3.2%, antrum in 36.8%, and entire stomach in 1.8%. In 2.8% of cases, concurrent involvement of cardia and body and in 3.9% concurrent involvement of body and antrum. ([Chart 1](#) and [2](#)) were diagnosed.

In this study, BMI of patients with cardiac cancer was 23.37 ± 4.55 kg/m² and in non-cardiac patients was 22.72 ± 4.30 kg/m² ($P = 0.512$). BMI was 21.6 ± 4.22 kg/m² in patients with adenocarcinoma type and 24.81 ± 4.07 kg/m² in the group with signet ring cell type ($P = 0.993$). No statistically significant difference was observed between these groups.

History of using cigarettes or opium was evaluated in 124 cases. 13 patients (10.4%) smoked cigarettes, and

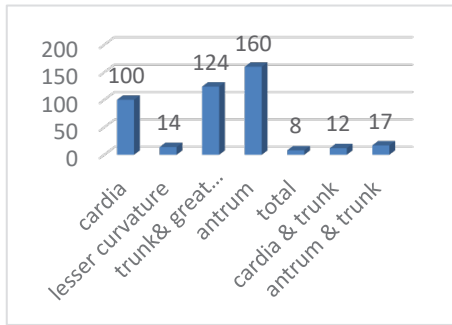


Chart 1: Frequency distribution of studied patients based on the anatomical location of gastric neoplasm involvement

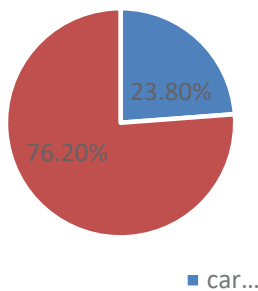


Chart 2: Frequency of cardia and non-cardia neoplasms

Table 1: Frequency of smoking and opium consumption in the studied patients

Substance use		Percentage of patients
Cigarette usage	+	10.3%
	-	89.7%
Opium usage	+	4%
	-	96%
Both	+	2.2%

five patients (4%) were opium users. Also, three patients (2.2%) used both (Table 1).

DISCUSSION

According to the results, in terms of location of tumoral involvement, cardia was involved in 23%, body and greater curvature in 28.5%, lesser curvature in 3.2%, antrum in 36.8%, and the entire stomach in 1.8%. If we consider cardiac involvement only, 100 patients (23%) had cardiac cancer, and 335 patients (77%) had non-cardiac cancer. The results were similar to the study by Dessan and colleagues, who aimed to investigate the 20 years history of gastric cancer in the Netherlands (12,13).

Younging Zhou and others showed an increase in cardiac cancer compared with other patients with gastric cancer in 2008. It is worth noting that their study had a higher mean age. In the current study, the percentage of people with cardiac cancer was lower, and the mean age of the patients in both cardiac and non-cardiac groups was not significantly different (14).

The results demonstrate that the mean age of patients with cancer was 66.8 years. In the study of Bafandeh and co-workers in West Azerbaijan, Iran, the mean age was 64.57 ± 11.32 years, which was close to the current study results. On the other hand, the ratio of males to females was 2.8, which is higher than the current study (15).

Another feature of this study is the histological examination of biopsy specimens. Approximately 10.9% of the adenocarcinomas were of the signet ring cell type, which was lower than the study of Young and colleagues in 2004 (26%) (16).

In this study, BMI in patients with cardiac cancer was 23.37 ± 4.55 kg/m² and in non-cardiac patients was 22.72 ± 4.30 kg/m² ($P = 0.512$). BMI was 21.6 ± 4.22 kg/m² in patients with adenocarcinoma type and 24.81 ± 4.07 kg/m² in the group with signet ring cell type ($p = 0.993$). No statistically significant difference was observed between these groups.

A study by Ping Young and others on 9492 patients with gastric cancer showed no statistically significant association between overweighting and gastric cancer (17). However, there was a significant relationship between upper gastrointestinal cancer and cigarette smoking in 3410 patients in the study by Tran and colleagues. But no strong correlation was found in the statistical analysis performed in this study. It might be because of the smaller number of patients (18).

CONCLUSION

Overall, there are many studies on the epidemiology of gastric cancer in Iran. What can be concluded in this study is that non-cardiac adenocarcinoma is more common than cardiac type.

ACKNOWLEDGMENT

The authors would like to express their gratitude to the Clinical Research and Development Unit of Ayatollah Rouhani Hospital in Babol, Iran.

STATEMENT OF ETHICS

This research project was approved by the Research Committee and Ethics Committee of Babol University of Medical Sciences (ethic code: IR.MUBABOL.HRI.REC.1397.042).

DISCLOSURE STATEMENT

The authors have no conflicts of interest to declare

FUNDING SOURCES

None

AUTHOR CONTRIBUTIONS

M.R. and J.SH. conceived the research question, designed the protocol, and were involved in the literature search, study selection, and data extraction. M.R., J.SH, S.S., N.A., and T.R. contributed to data acquisition, analysis, and interpretation. M.R. and J.SH. created the tables and charts.

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