

GASTRIC CARCINOMA: LOCATION, MORPHOLOGICAL AND HISTOLOGICAL PROFILE

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ABSTRACT

Objectives: To know the common tumor location, morphological and histological types of gastric carcinoma.

Methodology: This cross sectional study was conducted in gastroenterology unit HMC from January to August 2010. One hundred and thirteen patients of more than 30 years of age and having endoscopic and biopsy proven gastric carcinoma were included in the study. All patients after necessary investigation were prepared for endoscopic examination, upper gastrointestinal endoscopy was done and findings were recorded. Biopsies of the lesions were taken for histopathological confirmation.

Results: Seventy five (66.4%) patients were male and 38(33.6%) were female. The mean age was 56.02±12.11 years. Antrum was involved in 29(25.7%) cases alone, body alone was involved in 16(14.2%) cases, body and antrum in combination were involved in 15(13.3%) cases, cardia and fundus in 15(13.3%) cases, cardia alone in 13(11.5%) cases, fundus alone in 6(5.3%) cases, fundus, antrum and body in combination in 5(4.4%) cases, cardia, fundus and body in combination in 3(2.7%) cases and cardia and body in combination were involved in 2(1.8%) cases, while stomach was diffusely involved in 9(8.0%) cases. Tumor was polypoid/fungating in 51(45.1%) cases, ulcerated in 43(38.1%), infiltrating in 17(15.0%) and fungating and ulcerated in 2(1.8%) cases. Intestinal type gastric carcinoma was present in 39(34.5%) cases and diffuse type gastric carcinoma was present in 74(65.5%) cases.

Conclusion: Gastric carcinoma is a male predominant neoplasm which commonly involves the antrum, usually as fungating or ulcerated lesion and majority of gastric carcinoma are diffused type gastric carcinomas.

Key Words: Gastric carcinoma, Intestinal type, Diffuse type, Morphology, Intestinal location.

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INTRODUCTION

Gastric carcinoma remains a common disease worldwide with a dismal prognosis. Although there has been a decline in gastric cancer incidence in developed countries over the last several decades, gastric cancer still accounts for over 10 percent of annual cancer deaths¹. It

represents the fourth most frequent malignancy and second leading cause of cancer related death worldwide².

It is uncommon in persons younger than 40 years, the mean age at diagnosis is 63 years and men are affected twice as often as females^{3,4}. Japan and Korea have the highest gastric cancer rates in the world⁵, and the lowest incidence rates are observed in North America, North Africa, South Asia, and Australia⁶.

Gastric cancer is generally asymptomatic until the disease is quite advanced⁷. With advanced gastric cancer, the common symptoms are weight loss and abdominal pain, nausea, vomiting, anorexia, dysphagia, melena, and early satiety⁸. Pyloric outlet obstruction can occur with tumors of the antrum and pylorus, and tumors of the cardia can cause dysphagia due to involvement of the lower esophageal sphincter and development of pseudoachalasia. The physical examination is

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usually unremarkable. Cachexia and signs of bowel obstruction are the most common abnormal findings. Occasionally it is possible to detect an epigastric mass, hepatomegaly, ascites, and lower extremity edema⁹.

Gastric carcinoma has different sites of involvement and various morphological and histological presentations. Although most gastric cancers arise in the antrum of the stomach, the incidence of proximal tumours³ of the cardia and the fundus is increasing dramatically which have a much poorer prognosis¹⁰. Studies have shown that the majority of gastric carcinoma patients among American Asian/Pacific Islanders have non cardia cancers while Hispanics, blacks and whites have higher rates of gastric cardia cancers¹¹. In Pakistan a study carried out in Agha Khan University, Karachi showed tumour location in antropyloric region in 53 % cases and in the proximal part of the stomach in 35 % cases, while in 12 % cases tumour was diffusely involving the stomach¹². A study carried out in Sri Lanka showed that 52.6 % of tumours were located in the proximal stomach involving the cardia, 30% involved the body and 17.5 % were in the distal stomach¹³.

Gastric cancer may present morphologically as Exophytic, with protrusion of a tumour mass into lumen, Flat or depressed, in which there is no obvious mass within mucosa or Excavated, whereby a shallow or deeply erosive crater is present in the stomach mucosa¹⁴. Study done in Agha Khan University, Karachi showed that gastric carcinoma was a polypoid fungating growth in 51 % cases while it produced a diffuse thickening in 49 % case¹². Microscopically gastric carcinoma presents either as intestinal type¹⁵, involving the distal stomach and behaves relatively better than the diffuse type¹⁶, which may involve any part of the stomach, especially cardia and have a worse prognosis. Majority of the gastric carcinomas are of diffuse type¹². The rationale of this study was to know the common tumour location, endoscopic appearance and histological types of gastric carcinoma in our local set up which could be utilized in formulating surveillance and management strategies of gastric carcinoma.

METHODOLOGY

This Cross Sectional descriptive study including 113 patients was carried out in the department of Gastroenterology, Hayatabad Medical Complex, Peshawar from January 2010 to August 2010. Patients of both gender, and age

more than 30 years and having endoscopic and biopsy proven gastric carcinoma were included in the study, All those patients were excluded from the study who were either unfit for the upper gastrointestinal endoscopy on the basis of hemodynamic instability or some other co morbid conditions and were high risk for the procedure. Similarly patients with benign gastric tumours, gastric lymphoma and carcinoid tumours of stomach were excluded from the study to minimize bias in the study.

Proper approval was taken from the Ethical Committee of the institution before starting the study. Informed consent was taken from all patients seen in OPD having suspicion of gastric carcinoma, and either assessed in OPD or admitted to the ward and evaluated by detailed history, thorough clinical examination, and appropriate investigations. All patients were prepared for endoscopic examination, upper endoscopy was done and findings were recorded. Biopsies of the lesions were taken for histopathological confirmation. All those patients who fulfill the inclusion criteria and gave consent were included in the study. The informations thus collected were entered into a proforma.

Data was analyzed by using statistical software (SPSS version 10). Mean \pm SD was calculated for continuous variables like age. Frequencies were calculated for categorical variables like tumor location, morphology and histopathology.

RESULTS

A total of 113 patients were included in this study. Out of 113 patients 75 (66.4%) were male and 38(33.6%) were female with a male to female ratio of 1.97:1.

The mean age was 56.02 \pm 12.11 years with minimum age of 30 years and maximum age of 80 years. Majority of patients, 66 (58.4%) were in the age range of 46-60 years as shown in Table 1.

Antrum was the most common site having carcinoma followed by body. Body and antrum in combination were involved in 15 (13.3%) cases, cardia and fundus in 15 (13.3%) cases, cardia alone in 13 (11.5%) cases, fundus alone in 6 (5.3%) cases, fundus, antrum and body in combination in 5 (4.4%) cases, cardia, fundus and body in combination in 3 (2.7%) cases and cardia and body in combination were involved in 2 (1.8%) cases. Stomach was diffusely involved in 9

Table 1: Demographic Characteristics

Variables			
Gender	Male	75	(66.4%)
	Female	38	(33.6%)
Age	30-45	22	19.5
	46-60	66	58.4
	61-75	23	20.4
	>75	2	1.8

Table 2: Gender Wise Distribution of Tumor Location

		Gender		Total
		Male	Female	
Tumor location	Cardia	9 12.0%	4 10.5%	13 11.5%
	Fundus	3 4.0%	3 7.9%	6 5.3%
	Body	10 13.3%	6 15.8%	16 14.2%
	Antrum	22 29.3%	7 18.4%	29 25.7%
	Cardia and fundus	12 16.0%	3 7.9%	15 13.3%
	whole stomach	4 5.3%	5 13.2%	9 8.0%
	Body and antrum	9 12.0%	6 15.8%	15 13.3%
	cardia,fundus and body	1 1.3%	2 5.3%	3 2.7%
	Fundus,bodyand antrum	3 4.0%	2 5.3%	5 4.4%
	Cardia and body	2 2.7%		2 1.8%
Total		75 100.0%	38 100.0%	113 100.0%

Table 3: Gender Wise Distribution of Morphology

		Gender		Total
		Male	Female	
Morphology	Polypoid/fungating	34 45.3%	17 44.7%	51 45.1%
	Ulcerated	29 38.7%	14 36.8%	43 38.1%
	Infiltrating	10 13.3%	7 18.4%	17 15.0%
	Fungating and ulcerated	2 2.7%		2 1.8%
Total		75 100.0%	38 100.0%	113 100.0%

Table 4: Gender Wise Distribution of Histopathology Report

Histopathology report	Gender		Total
	Male	Female	
Intestinal type gastric carcinoma	27 36.0%	12 31.6%	39 34.5%
Diffuse type gastric carcinoma	48 64.0%	26 68.4%	74 65.5%
Total	75 100.0%	38 100.0%	113 100.0%

(8.0%) cases (Table 2).

Tumor was polypoid/fungating in 51 (45.1%) cases, ulcerated in 43 (38.1%) cases, infiltrating in 17 (15.0%) and infiltrating and ulcerated in 2 (1.8%) cases as shown in Table 3.

Diffuse type gastric carcinoma was the most common histological carcinoma followed by intestinal type gastric carcinoma as shown in Table 4.

DISCUSSION

Gastric cancer represents one of the most frequent neoplasias. Although its incidence decreased over the last few decades in industrialized countries, it still represents nowadays a major cause of death through cancer throughout the world.

The main aim of this study was to know the common clinical presentation, site distribution, endoscopic appearance and histological types of gastric carcinoma in our local set up which could be utilized in diagnosing and formulating surveillance and management strategies of gastric carcinoma.

Men are twice as likely to get stomach cancer as women. This is born out by our study as majority of patients were male. The male predominance demonstrated in our study was in accordance with previous studies done both nationally and internationally. As in a study done by Durani AA et al¹⁷ in Rawalpindi, and by Eskandar H et al¹⁸ in Iran also demonstrated male predominance of gastric carcinoma.

Gastric cancer has a predilection for elderly patients. Same was the case with our study in which majority of the patients were in the old

age. This is also in accordance with other studies done in Pakistan, Durani AA et al¹⁷ and outside the country, Eskandar H et al¹⁸, but 22 (19.5%) cases in our study have been diagnosed below 45 years. So the young patients presenting with signs and symptoms suggestive of gastric carcinoma and associated with alarm features should be screened as early as possible so that they can be diagnosed and treated in time.

Gastric cancer can occur in any part of the stomach. The location of the primary tumor has a bearing on the prognosis. Although most gastric cancers occur arise in the antrum of the stomach, the incidence of proximal tumors³ of the cardia and the fundus is increasing dramatically which have a much poorer prognosis¹⁰. Reviewing the site specific distribution, the most frequently reported site in our study was the distal stomach followed by body while stomach was diffusely involved in 9 (8.0%) cases. This is in accordance with other studies done nationally¹² but it is not in conformity with the study done by Siriwardana HDRC in Sri Lanka which showed that 52.6% of tumors were located in the proximal stomach involving the cardia, 30% involved the body and 17.5% were in the distal stomach¹³.

Gastric carcinoma is still antral predominant carcinoma, and though we did not study the association of Helicobacter Pylori with the gastric carcinoma in our study but it seems to be the cause of antral predominant carcinomas which need further studies to explain this association in our set up.

This difference of tumor location in our study and other studies done internationally need further work to study this changing pattern of gastric carcinoma from distal to proximal stomach.

Gastric carcinoma has various

morphological and histological presentations. In our study it was polypoid/fungating in majority of cases followed by ulcerated, infiltrating and infiltrating and ulcerated lesions.

This is somewhat similar to the study carried out in Agha Khan University, Karachi which showed that gastric carcinoma was polypoid/fungating in 51% cases while it produced a diffuse thickening in 49 % cases¹² but it differs in the way that in our study 38.1% cases presented as ulcerated lesions while the number of infiltrating lesion was much less than presented in Karachi. Our findings also did not match with those of Chanda N et al¹⁹ who found that infiltrative type of tumor was the commonest followed by ulcerative and polypoid/fungating. Our findings also differ from those of plummer JM et al²⁰ of west indies who found the ulcerating type of tumor to be the commonest presentation.

As shown in the result diffuse type gastric carcinoma was the most common histological carcinoma in our study. This is in conformity with the findings of Ahmad Z et al¹² of Agha Khan University, Karachi in which tumors were diffuse type in 63% cases and intestinal type in 37% cases, but our findings do not match with those of Chanda N et al¹⁹ and plummer JM et al²⁰ in whose studies the intestinal type of gastric carcinoma was the most frequent histological type of gastric carcinoma.

CONCLUSION

This study shows that Gastric carcinoma is a male predominant neoplasm usually of old age but can occur at younger ages. It predominantly involves the antrum, usually as polypoid/fungating or ulcerated lesion and majority of gastric carcinoma are diffuse type gastric carcinomas.

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None Declared

REFERENCE

1. Parkin DM, Bray FI, Devesa SS. Cancer burden in the year 2000. The global picture. *Eur J Cancer* 2001;37:4.
2. Khan FA, Shukla AN. Pathogenesis and treatment of gastric carcinoma. An up-date with brief review. *J Can Res Ther* 2006;2:196-9.
3. McQuaid KR. *Gastrointestinal diseases.*

- Current medical diagnosis and treatment. 47 ed. USA: Mc Graw Hill: 2008. P. 1406-8.
4. Crew KD, Neugut AI. Epidemiology of gastric cancer. *World J Gastroenterol* 2006; 12:354-62.
5. Yamamoto S. Stomach cancer incidence in the world. *Jpn J Clin Oncol* 2001;31:471.
6. Parkin DM. International variation. *Oncogene* 2004;23:6329-40.
7. Siriwardana HD, Pathirana A. Adenocarcinoma of the stomach in a tertiary care hospital in Sri Lanka. *Ceylon Med J* 2007;52:53-5.
8. Wanebo HJ, Kennedy BJ, Chmiel J, Steele G Jr, Winchester D, Osteen R. Cancer of the stomach. A patient care study by the American College of Surgeons. *Ann Surg* 1993;218:583-92.
9. Dupont Jr JB, Lee JR, Burton GR, Cohn Jr I. Adenocarcinoma of the stomach: review of 1,497 cases. *Cancer* 1978;41:941-7.
10. Zhang XF, Huang CM, Lu HS, Wu XY, Wang C, Guang XL, et al. Surgical treatment and prognosis of gastric cancer in 2613 patients. *World J Gastroenterol* 2004;10:3405-8.
11. Wu X, Chen VW, Ruiz B, Andrew P, Su LJ, Correa P. Incidence of esophageal and gastric carcinoma among American Asians/Pacific Islanders, whites, and blacks: subsite and histology differences. *Cancer* 2006;106:683-92.
12. Ahmad Z, Idress R, Azad NS, Ahmad R, Ahsan A, Asghar N. Gastric Carcinoma: typing, staging, lymph node and resection margin status on gastrectomy specimen. *J Coll Physicians Surg Pak* 2007;17:539-42.
13. Siriwardana HD, Pathirana A. Adenocarcinoma of the stomach in a tertiary care hospital in Sri Lanka. *Ceylon Med J* 2007;52:53-5.
14. Kumar V, Abbas AK, Fausto N, Mitchell RN. *Robbins Basic Pathology.* 8th ed. Philadelphia: Saunder Elsevier; 2007. p. 598-600.
15. Lauren P. The two histological main types of gastric carcinoma: diffuse and so-called intestinal-type carcinoma. an attempt at a histo-clinical classification. *Acta Pathol Microbiol Scand* 1965;64:31.
16. Miyahara R, Niwa Y, Matsuura T, Maeda T, Ando T, Ohmiya N, et al. Prevalence and prognosis of gastric cancer detected by screening in a large Japanese population: data from a single institute over 30 years. *J*

- Gastroenterol Hepatol 2007;22:1435-42.
17. Durrani AA, Yaqoob N, Abbasi S, Siddiq M, Moin S. Pattern of upper gastro intestinal malignancies in Northern Punjab. Pak J Med Sci 2009;25:302-7.
 18. Eskar H, Rahim M, Jalal H, Mehrdad A, Rajabi T. Clinical profile of gastric cancer in Khuzestan, southwest of Iran. World J Gastroenterol 2006;12:4832-5.
 19. Chanda N, Khan AR, Romana M, Lateef S. Histopathology of gastric cancer in Kashmir: a five year retrospective analysis. JK Sci 2007;9:21-4.
 20. Plummer JM, Gibson TN, McFarlane MEC, Hanchard B, Martin A, McDonald AH. Clinicopathologic Profile of gastric carcinomas at the University Hospital of the West Indies. West Indian Med J 2005;54:364.

CONTRIBUTORS

DK conceived the idea and planned the study. MKH, AR AK, MA & FA did the data collection and analyzed the study. All the authors contributed significantly to the research that resulted in the submitted manuscript.