Original Article

Frequency of Endoscopic Gastric Neoplasms in Five Years at JPMC

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ABSTRACT

Objectives: Gastric cancer is among the most common malignancies in Pakistan. The aim of our study are i) to document different histological types of gastric malignancies as per age and sex ii) discuss its possible association in patients who underwent endoscopy and iii) compare our data with local and abroad studies.
Study Design: Retrospective study.
Place and Duration of Study: This study was conducted in the Department of Pathology, Basic Medical Science Institute, Jinnah Postgraduate Medical Centre, Karachi, Pakistan, from 1st January2003 to 31st December 2007.
Materials and Methods: A total of 740 cases of gastric endoscopic biopsies were received for histopathological evaluation at the Department of Pathology, Basic Medical Science Institute, JPMC, Karachi. Out of these cases, a total of 70 gastric neoplasms were separated, analyzed and classified according to the WHO classification system and their relative frequencies were recorded.
Results: Gastric adenocarcinoma was the commonest neoplasm with male predominance in 5th to 7th decade of life, account for 88.57% (62/70) of all gastric neoplasms. Gastric lymphoma was the second common with 8.57%(06/70) and gastric carcinoid was least common with 1.43%(1/70) of all gastric neoplasms.
Conclusion: This study highlights that adenocarcinoma is the most common gastric malignancy seen in most high risk group includes elderly males followed by lymphoma with no gender difference. So we advise regular endoscopic biopsies surveillance at least in high risk age group for the early detection of cancer.
Key Words: Gastric carcinoma, adenocarcinoma, lymphoma

INTRODUCTION

Cancer is still one of the major health problems worldwide with increasing frequency, especially with increased modernization, increased exposure to radiation and predisposition to large number of carcinogenic agents.[1] In 2004, cancers accounted for over 7 millions deaths (13% of total mortality) and there were more than 10 million new cases worldwide. More than 60% of cancer deaths and approximately half of new cases occurred in developing regions.[2,3] There is a significant variation in the distribution of site-specific cancer mortality and incidence by region.[3] Gastrointestinal cancers account for a large fraction of human neoplasms. They are almost without exception incurable when gross metastases exist.[4]Gastric carcinoma is a worldwide disease. In 1990, it was the second most common cancer in the world with an estimated 800,000 new cases every year, 60% of them being in developing countries[6]. The areas of highest incidence include Eastern Asia, South America and Eastern Europe and those of lower incidence include North America, North Europe, most parts of Africa and South Eastern Asia.[7,8]. Its incidence has markedly decreased in developed countries but remains high in countries like Japan and Chile; Japan having the highest incidence worldwide[9].In 2008, it has come down to become the 6th commonest cancer worldwide. Interestingly, 74% of all global cases are from Asia, where gastric carcinoma is the 2nd commonest cancer in males and the 4th in females[10]. The gastric antrum is the most common location.[11]Endoscopic biopsy is widely regarded as the most sensitive and specific diagnostic tool for gastric cancer[7]. Identifying the environmental risk factors may possibly shed more light on effective treatment and the prevention of gastric cancer but exact prevalence rate in Pakistan is unknown due to the lack of a population based cancer registry.

The aim of our study was to document different histologic types of gastric cancer as per age and sex groups in the patients and to know the frequency of microscopic subtypes of gastric malignancies seen in the Department of Pathology, Basic Medical Sciences Institute , Jinnah Postgraduate Karachi over a five year period and to classify them using the Classification Scheme proposed by the World Health

Organization (WHO)[12] for gastric malignancies, analyze the cases using simple statistical methods, and to compare the data obtained with those of other workers in other parts of country and rest of the world.

MATERIALS AND METHODS

Seven hundred and forty consecutive endoscopic gastric biopsies received during 1st January 2003 to 31st December 2007, were studied in the department of Pathology, Basic Medical Sciences Institute, Jinnah Postgraduate Medical Centre,Karachi. This is a retrospective study. The specimens were mostly received from the Medical unit VII of JPMC Karachi. The relevant clinical information and demographic data were retrieved from record. The gastrointestinal symptoms included were abdominal pain, dyspepsia, and vomiting and weight loss. Patients above 12 years of all ages and both sexes having undergone gastric biopsy were included in the study.The endoscopic gastric biopsy tissue was fixed in 10% formaldehyde, routinely processed in an automatic tissue processor for 17 hours and then embedded in paraffin wax. Three to five sections of 4 micron thickness were cut on rotary microtome and routinely stained with Haematoxylin and Eosin (H&E). The tissue blocks were serially sectioned. In selected cases Periodic-acid Schiff (PAS) staining was also performed to detect signet ring cancer cells. The tumours were classified according to the WHO classification of gastric tumours. Majority of the biopsies were taken form antral part of gastric mucosa. Cases excluded from the study were tumors with extensive areas of necrosis and no viable or normal looking tissues, cases where the site of biopsy is unclear, not mentioned by endoscopist or could not be identified histologically and other types of gastric malignancies like gastrointestinal stromal tumors. The author and his senior pathologist examined the sections independently and diagnosis was made in the light of final histological findings.

RESULT

Out of the 740 cases reviewed, a total of 70 gastric malignant neoplasms were observed 48(68.57%) males versus 22(31.43%) females. The mean age at the time of diagnosis was 56 years. Median age was 60 years (range 22–85). Out of total gastric malignant neoplasms, adenocarcinoma found as a commonest malignant tumor with high frequency of 88.57% and second common tumor was lymphoma with 8.57%. A least percentage (1.43%) of carcinoid tumor and infiltrating squamous cell carcinoma were also found (Table No. 1).Maximum biopsies (70%) sended from antrum and 30% of the endoscopic biopsies received from body (corpus) of the stomach. (Table No.2). Gastric neoplasms were found more than double in males with 68.57% as compare to female(31.43%) reflects male predominance.Out of a total 70 malignant gastric neoplasms,a large number of tumors 60(85.71%) were found in 4th to 7th decades of life. Maximum number of cases, 19(27.14%) were found in 5th decade and minimum number of cases, 01(1.42%) was found in 9th decade of life. (Table No.3).

Table No.1: Frequency of neoplastic lesions in gastric biopsies

Gastric Neoplastic lesions	Frequency	Percentage
Adenocarcinoma	62	88.57
Lymphoma	06	8.57
Carcinoid	01	1.43
Squamous cell carcinoma(Infiltrating)	01	1.43
Total	70	100

Table No.2: Frequency of sites of gastric neoplastic lesions

Site	Frequency	Percentage
Antrum	49	70
Body	21	30
Total	70	100

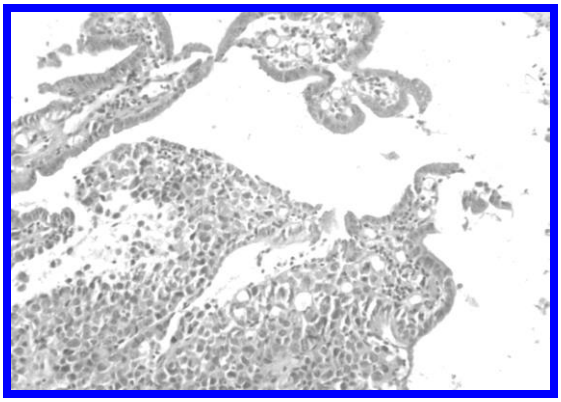
Table No.3: Age and sex distribution of different gastric malignancies

Age Group	Gastric Malignant Lesions								Total
	Adenocarcinoma		Lymphoma		Carcinoid		Squamous cell carcinoma		
	M	F	M	F	M	F	M	F	
10-20	-	-	-	-	-	-	-	-	
21-30	1	3	-	-	-	-	-	-	4
31-40	8	2	1	-	1	-	-	1	13
41-50	11	4	2	2	-	-	-	-	19
51-60	11	2	-	-	-	-	-	-	13
61-70	8	6	-	1	-	-	-	-	15
71-80	4	1	-	-	-	-	-	-	5
81-90	1	-	-	-	-	-	-	-	1
Total	44	18	3	3	1	-	-	1	70

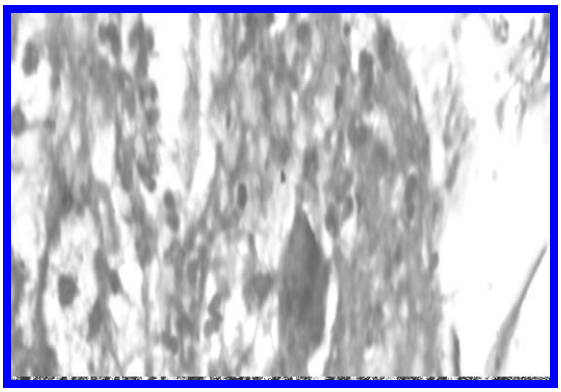
Gastric neoplasms were significantly high in males as compare to females with Chi-square 19.31 (P<0.001).Frequency and different subtypes of gastric adenocarcinoma analysed according to WHO classification. In a total of 62 cases of adenocarcinoma, maximum number of cases 20 (32.25%) were found to be adenocarcinoma (intestinal type), 19 (30.64%) cases were found to be signet ring cell carcinoma, 16 (25.81%) cases were found to be adenocarcinoma (diffuse type) and 07 (11.3%) cases of mucinous carcinoma were also found. (Table No.4).

Table No.4: Frequency and types of adenocarcinoma

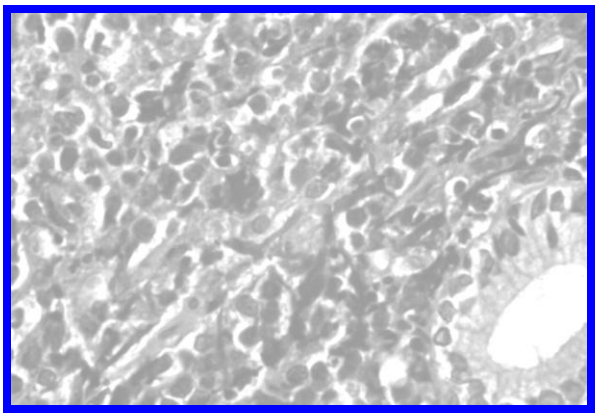
Type	Frequency	Percentage
Intestinal	20	32.25
Diffuse	16	25.81
Signet ring cell carcinoma	19	30.64
Mucinous	07	11.30
Total:	62	100



Photomicrograph: Gastric adenocarcinoma showing gastric mucosa with discohesive signet ring cells. H&E X 100.



Photomicrograph: Adenocarcinoma showing groups of discohesive cells with pleomorphic nuclei. PAS X 400.



Photomicrograph: Gastric lymphoma. H&E X 400.

DISCUSSION

Gastric carcinoma is one of the most common malignancies worldwide [13]. It is the fourth most common type of cancer and the second most common among cancer deaths worldwide.[14]We have reported a total of 70 cases of endoscopic gastric malignancies in the study period. Gastric carcinoma is extremely rare before the age of 30 years and most patients are above 50 years of age [15,16]. Though a steady decline in the incidence and mortality rates of gastric carcinoma has been observed worldwide over the past several decades, the absolute number of new cases per year is increasing mainly because of the aging of the population[17]. In our study, majority of the patients 60 cases (85.7%) were in the age range of 41 to 70 years. This finding corroborates well with international trends. However, cases of gastric carcinoma in young and even in children are recorded in world literature [18,19]is in agreement of our study and we found 04 cases (5.7%) and 13cases (18.57%) in the age groups of 21-30 and 31-40 years. As seen in other international studies, males were clearly affected more commonly, nearly two times more than females[15]. These findings were also in agreement with our findings where gastric neoplasms were found more than double in males with 68.57% as compare to female (31.43%) reflects male predominance.

The most frequent site of stomach cancer is the distal stomach i.e., the antro-pyloric region[15]. Carcinomas of the body or the corpus are located mostly along the greater or lesser curvature [15,16] . In our study, the distal stomach (antrum) was also seen to be the primary site in 70% of cases followed by the body or corpus (30%).

A study done in Nepal[20], who found adenocarcinoma to be the most common malignancy constituting 40% of 82 cases. In other studies Afzal et al[21] who

reported 42 (87.5%) of adenocarcinoma, Arif and Syed [22] reported 35 (70%) adenocarcinomas and Kim[23] reported 332 (97%) cases of adenocarcinoma all were inagreement with our study showed 62(88.57%) of adenocarcinoma as commonest malignancy. But our study showed disagreement with Hsu et al[24] who reported only 7 (1.13%) cases of adenocarcinoma in their neoplastic subjects. Primary malignant lymphoma of stomach makes up only a small percentage of all malignant tumors of this organ but there is evidence that its incidence is increasing [25]. In our study lymphomas were 6 (8.57%) out of a total 70 malignant tumors with 1:1 male female ratio (Table 1). Mehdi[26] reported 21 (6%) gastric lymphomas in a large series of 352 cases with male:female ratio 2:1 is comparable. Our study was comparable with Afzal [21] and Hsu et al[23]who reported 1 (2.2%) case and 1 (0.16%) case of lymphoma in their studies respectively.In our study 1 (1.4%) case of carcinoid was found out of a total of 70 malignant neoplasms. In our series 1 (1.4%) case of infiltrating squamous cell carcinoma was also observed.

H. pylori has been implicated as an etiologic factor in gastric carcinoma[27]. A prospective study in Korean population and found strong association of smoking and alcohol consumption[28]. Despite a high incidence in many Asian nations, patients have improved gastric cancer survival compared with other races[29-32]. These observations highlight the need to carefully examine gastric cancer outcomes among the different pakistani ethnicities. Among risk factors, salt intake, smoked meat, smoked fish, pickled vegetables, chili peppers, alcohol and tobacco are found to incur high risk[16]. Our study invites research in Pakistan to find out the incidence of gastric carcinoma in different castes and age groups and also correlate with above risk factors.

CONCLUSION

Gastric carcinoma is a common malignancy in this part of world. This study highlights that adenocarcinoma is the most common gastric malignancy seen in most high risk group includes elderly males followed by lymphoma with no gender difference. However, we advise that regular endoscopic biopsies surveillance should be done at least in the high risk group for the early detection of cancer.There is obvious scope of further studies on gastric carcinoma to assess the clinical correlation and also risk factors.

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