

Original Research Article

Clinicopathological study of carcinoma stomach over a period of 5 years

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ABSTRACT

Background: 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 purpose of this study was to identify clinicopathological parameters in gastric carcinoma.

Methods: A total of 115 gastrectomy specimen received in 5 year period at a tertiary care center was analyzed. The clinical data was recorded. After fixing the specimen in 10% formal saline for 24 hours the gross appearance of the specimen was studied. The gross findings were recorded following Borrmann classification. The tissue blocks were routinely processed and stained with H&E stain. The results were tabulated.

Results: The prevalence of gastric carcinoma was 4.46%, with male: female ratio of 3:1 and mean age of 50years. The prevalence of carcinoma stomach was more common in rural areas and poor socio economic status. Sixty percent of patients who consumed mixed diet suffered from carcinoma and 82.8% had history of intake of alcohol. Carcinoma stomach was more common in A blood group. The tumor was more common in pyloric antrum (73.04%). According to Borrmann classification type II tumour was the commonest (66.09%) of the lesions. Commonest histological pattern was adenocarcinoma; intestinal type (86.72%).

Conclusions: The prevalence of carcinoma stomach in the present study was 4.46%. High prevalence of gastric carcinoma was seen in patients with history of smoking, intake of alcohol and consumption of mixed diet. Carcinoma stomach was more common in A blood group followed by B blood group. Adenocarcinoma of intestinal type was the commonest.

Keywords: Borrmann classification, Dietary habits, Gastric carcinoma, Histopathology

INTRODUCTION

Gastric cancer is the most common cancer in the world accounting for 10% of all cancers. Over all rates in men are approximately double than the females.¹ There is marked difference in the incidence between north and south India. Stomach cancer admission in south India was 4 times as frequent as in north India with a remarkable preponderance of males (20: 1) versus (7:1) in rest of India. In Kashmir the incidence is 3-6 times higher than rest of India.² Endoscopy served as primary diagnostic procedure for diagnosing carcinoma stomach and has 80% accuracy the remaining 20% are evaluated by histopathological examination.

METHODS

A total of 115 gastrectomy specimens received in a 5 year period at a tertiary care center in the department of pathology was analyzed. The clinical details, demographic status, socio economic status, dietary habits, intake of alcohol, smoking including their blood groups were recorded. After fixing the specimen in 10% formal saline for 24 hours the gross appearance of the specimen was studied. The gross findings were recorded following Borrmann classification. The tissue blocks from the representative portions of the lesion along with the normal tissue were taken and routinely processed. The paraffin embedded blocks were cut into 2-4 microns thick

sections and stained with Hematoxylin and Eosin. Special stains were done wherever necessary (PAS, Alcian blue and Mayer's mucicarmine). The histopathological sections were reported as per WHO classification. The results were tabulated.

Borrmann classification for grossing³

- Type I: Polypoid growth.
- Type II: Fungating growth
- Type III: Ulcerating growth
- Type IV: Diffuse carcinoma (scirrhous type, linitis plastica) mucosa is normal, submucosa is thickened involving all the layers.
- Type V: Unclassifiable.

WHO classification histopathological (new)

- Adenocarcinoma a) Diffuse b) Intestinal
- Papillary adenocarcinoma.
- Tubular carcinoma.
- Mucinous carcinoma.
- Signet ring carcinoma.
- Adenosquamous carcinoma.
- Squamous cell carcinoma.
- Small cell carcinoma.
- Undifferentiated carcinoma.

RESULTS

Total numbers of malignancies reported during the study period were 2576. Gastric malignancies reported were 115 cases (4.46%). The ratio of male: female population was 85:30 (3:1). Mean age distributions of patients with carcinoma stomach were 50years (Table 1).

Table 1: Age distribution of patients with carcinoma stomach.

Age in Years	No of patients	Percentage
21-30	01	0.86
31-40	02	1.73
41-50	40	34.78
51-60	65	56.52
61-70	05	4.34
71-80	02	1.73
Total	115	100

The prevalence of carcinoma stomach was more common in rural areas than urban area, the ratio being 1.5:1. Carcinoma stomach was most common in poor socio economic group than high socio economic group (Table 2).

Sixty percent of patients who consumed mixed diet (both vegetarian and non-vegetarian) suffered from carcinoma stomach. 20.7% of cases had history of smoking and 82.8% had history of intake of alcohol (Table 3).

Table 2: Distribution of cancer stomach among rural and urban population and socio-economic studies.

Demography	Number of cases	Percentage and ratio
Rural	70	60.87
Urban	45	39.13
Rural urban ratio	70/45	1.5:1
Poor socio-economic group	90	78.27
High socioeconomic group	25	21.73

Table 3: Dietary habits, smoking and alcohol consumption in cases of cancer stomach.

Diet and habits	Number of cases	Percentage
Type of diet		
Mixed diet	69	60
Vegetarian diet	46	40
Smoker	18	20.7
Alcohol	72	82.8



Figure 1: Gross photograph of carcinoma stomach-nodular ulcerating variety, rounded ulcerated edges with marked thickening of the wall.

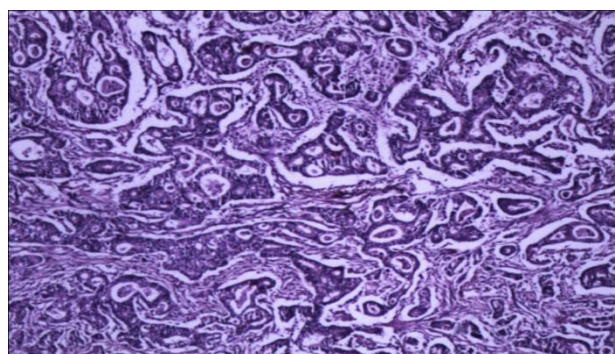


Figure 2: Gastric adenocarcinoma, intestinal type-moderately differentiated- showing tumour cells arranged as irregular glandular structures, with stratification, multiple lumens surrounded by a reduced stroma (H&E, 100x).

Table 4: Distribution of blood groups among the patient with carcinoma stomach.

Blood group	Number of cases	Percentage
Group A	50	43.48
Group B	38	33.05
Group O	20	17.39
Group AB	07	6.08

Table 5: Clinical symptoms in cases of carcinoma stomach.

Clinical symptoms	Number of cases	Percentage
Abdominal pain	65	56.52
Loss of appetite	35	30.43
Loss of weight	54	46.95
Vomiting	50	43.47
Sensation of fullness	42	36.52
Abdominal lump	40	34.78
Hematemesis	04	3.47
Malena	15	13.04
Jaundice	05	4.34
Dysphagia	04	3.47

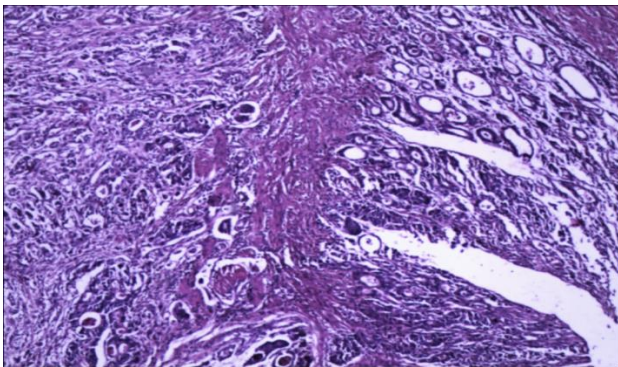


Figure 3: Gastric adenocarcinoma, intestinal type, infiltrating muscularis mucosa (H&E,100x).



Figure 4: Gross photograph of carcinoma stomach- Linitis plastica variant – showing no ulcer or growth with diffuse and rigid thickening of the wall of the stomach.

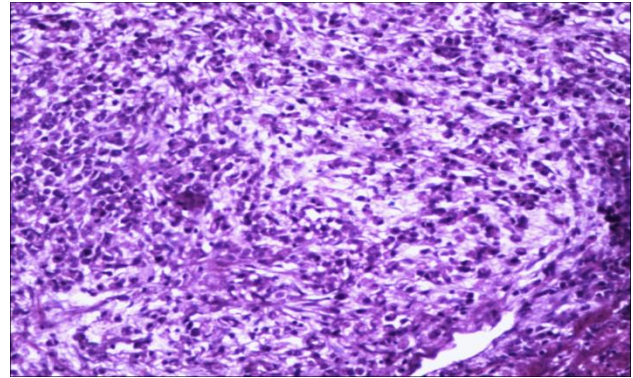


Figure 5: Gastric adenocarcinoma, diffuse type – showing diffusely infiltrating tumour cells as individual cells or small clusters (H&E, 100x).

Carcinoma stomach was more common in A blood group (43.48%) and B blood group (33.05%) (Table 4). The commonest clinical symptom was abdominal pain (56.52%), loss of weight (46.95%), vomiting (43.47%), sensation of fullness (36.52%) and abdominal lump (34.78%) (Table 5).

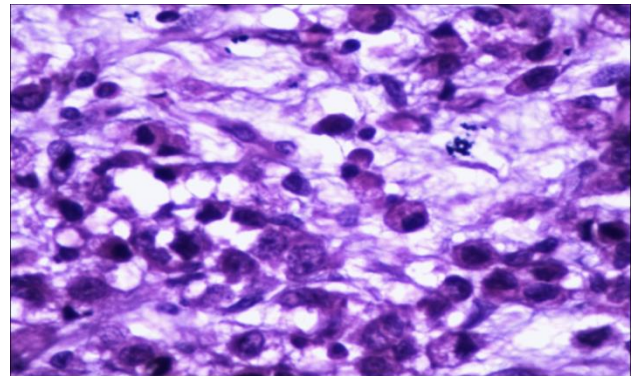


Figure 6: Gastric adenocarcinoma, diffuse type – showing tumour cells with intracytoplasmic mucin and exhibiting signet ring cell morphology (H&E,100x).

Table 6: Distribution of carcinoma stomach on gross examination.

Site	Number of cases	Percentage
Pyloric antrum	84	73.04
Body of stomach	20	17.39
Greater curvature	04	3.47
Lesser curvature	07	6.08
Gross forms		
Type I	25	21.73
Type II	76	66.09
Type III	12	10.44
Type IV	02	1.74

On gross examination the commonest site of tumour was pyloric antrum (73.04%) followed by body of the stomach (17.39%). According to Borrmann classification

type I (21.73%) and type II tumour constituted (66.09%) of the lesions followed by type III tumours (10.44%). Type IV constituted 1.74% of the lesions (Table 6).

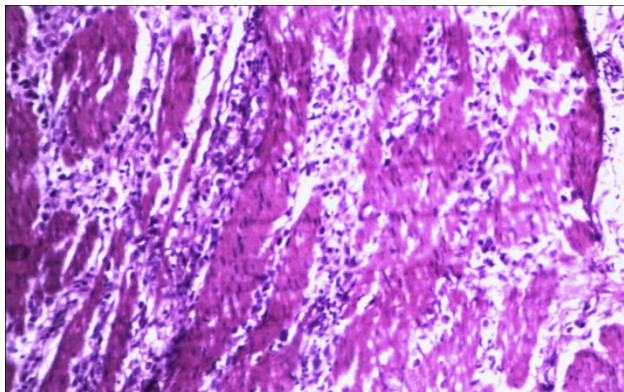


Figure 7: Gastric adenocarcinoma, diffuse type – showing tumour cells infiltrating the muscularis propria (H&E,100x).

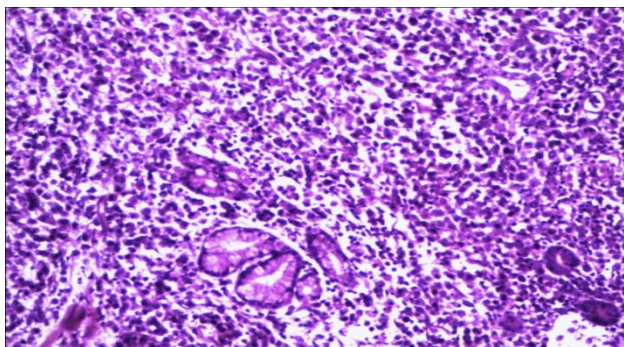


Figure 8: Gastric adenocarcinoma, diffuse type – showing tumour cells admixed with chronic inflammatory cells diffusely infiltrating in between the normal gastric glands (H&E,100x).

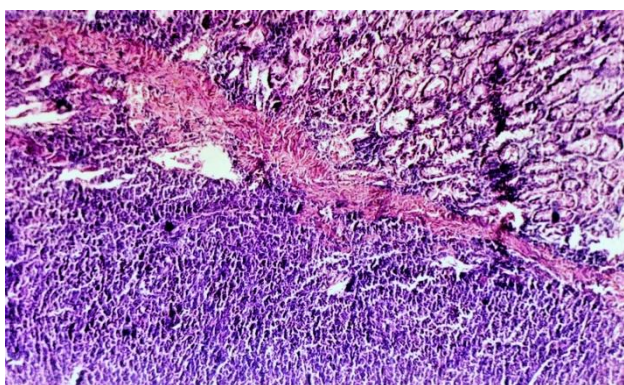


Figure 9: Lymphoma of stomach- showing mucosal glands, tumour cells in sheets and diffuse pattern and infiltration beneath the submucosa (H&E,100x).

Intestinal type (Figures 1-3) of adenocarcinoma (86.73%) was the commonest and diffuse type (Figures: 4-8) being (13.27%) on histopathology. One case of lymphoma

(Figure 9) and one case of carcinoid was seen in the present study (Table 7).

Table 7: Histological patterns of carcinoma stomach.

Histological type	Number of cases	Percentage
Adenocarcinoma		
Intestinal type	98	86.73
Diffuse type	15	13.27
Carcinoid	1	0.86
Lymphoma	1	0.86
Total	115	100

DISCUSSION

Gastric cancer is one of the most common cancer, about 95,000 cases are reported worldwide in 2012; and the third leading cause of cancer mortality. There is a wide geographical variation being highest in the Far East (Japan and China) and lowest in Africa.⁴⁻⁹ Abdulkareem FB et al analyzed 713 cases of malignant gastrointestinal tumours in south western Nigeria and his observations were: stomach cancer constituted 12% of cases oesophagus, pancreas, small intestine and gall bladder represented 2.5%, 2.2%, 1.7%, and 1.1% respectively.⁶ Colorectal cancers peaked in the 60-69 year age group, liver and stomach cancer occurred mostly between the 50-59 years age group. Daniel Lazar et al in their study out of 61 patients with carcinoma stomach, 43 were men and 18 were women with average age of 59.34 years.⁹ The commonest location of tumor was in the antrum (31cases) and body (15 cases). In the study by Oluwasola AO et al.⁵ the peak age group of patients was in the fifth decade and the male: female sex ratio was between 1.6:1 and 4.1:1. Antral location was predominant in intestinal-type carcinomas (52.6%) in the study by Naoko T et al.¹⁰

Henry Okuchukwu Ebili et al analysed 117 cases of gastric carcinoma representing 18.4% of all gastrointestinal tract malignancies.¹¹ There was a male preponderance with male: female ratio of 1.72:1; the middle-aged and elderly made up about 76.1% of cases. Gastric tumours were predominantly antral/ pyloric in 80% of cases and exophytic in 62.3% of cases. Abdul Kareem et al analysed 105 cases of gastric cancer (M:F = 2:1, mean age-55.3 years), 81% of which occurred above 45 yrs.⁴ Ahmed A et al in their study of 179 patients with gastric cancer, male to female ratio of 1.4:1 and mean age was 51±6.3. 5.6% patients presented with early gastric cancer.¹² In the present study the prevalence of gastric carcinoma was 4.46%, with male: female ratio of 3:1 and mean age of 50years. The prevalence of carcinoma stomach was more common in rural areas and poor socio economic status. Sixty percent of patients who consumed mixed diet suffered from carcinoma stomach. 20.7% had history of smoking and 82.8% had history of intake of alcohol. The tumor was most common in pyloric antrum (73.04%) followed by body of the stomach (17.39%). Daniel Lazar et al in their study as per Borrmann

classification, type I tumor was seen in 5 cases, type II in 20 cases, type III in 22 cases and type IV in 9 cases.⁹ The histopathological patterns were papillary adenocarcinomas (8.2%), tubular adenocarcinomas (46%), signet-ring cell carcinomas (27.8%) and mucinous adenocarcinomas (13.1%). In the study by Henry Okuchukwu Ebili et al, the intestinal histotype constituted 47.0% of cases.¹¹ In the study by Abdul Kareem et al there were 95 cases (90%) of adenocarcinomas, 8 (7.6%) mesenchymal tumours with one case each of small cell non-Hodgkin's lymphoma and carcinoid tumour.⁴ In the present study according to Borrmann classification type I (21.73%) and type II tumour constituted (66.09%) of the lesions. Commonest histological pattern was adenocarcinoma; intestinal type (86.73%) and diffuse type being (13.27%). One case of lymphoma and one case of carcinoid was seen in the present study. Zheng H et al, Intestinal-type carcinoma frequently occurred in old men, whereas the diffuse type comparatively occurred more in young women ($p < 0.05$).¹³ Abdi-Rad A over 36 years of his observations in gastric cancer, the prevalence of cancers in the upper and middle third of the stomach has increased and that of the lower third had decreased.¹⁴ These changes were seen in both sexes and age groups under and over 50 and it was more significant in younger. In the study by Lee HJ adenocarcinomas account for 95.8% of all gastric malignancies in Korea.¹⁵ Zhiwei Wang et al in their case-control study, the risk of gastric cancer in blood group A was significantly higher than that in non-A groups.¹⁶ In the present study carcinoma stomach was more common in A blood group (43.48%) and B blood group (33.05%).

CONCLUSION

The prevalence of carcinoma stomach in our institute was 4.46% with mean age distribution of 50 years. It is more common in rural area with poor socioeconomic status. Patients who consumed mixed diet with history of smoking and intake of alcohol had higher prevalence of carcinoma stomach. The commonest clinical symptom was abdominal pain, loss of weight and vomiting. The commonest location of tumor was in the pyloric antrum. According to Borrmann classification type II tumour constituted 66% of the lesions with Intestinal type of adenocarcinoma being the commonest. Carcinoma stomach was more common in A blood group followed by B blood group.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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