

A CLINICOPATHOLOGICAL CORRELATION OF GASTRIC MALIGNANCY IN ENDOSCOPIC BIOPSY

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Abstract

Background: Gastric carcinoma is the second most common tumor in the world. In India, malignancy of stomach ranks 7th in males, Gastric carcinoma is the 5th cause of death in male and 6th cause of death in female due to the cancer causing death in India. **Materials and Methods:** This observational study was undertaken in the Department of Pathology, SKMCH, Muzaffarpur, and Bihar from June 2018 to July 2019. Patient in the age group of 35 to 85 years were selected from the outdoors of the Gastroenterology Departments retrospectively. They were selected on the basis of clinical and pathological pictures they produced. At outpatients' department, patients coming with symptoms of dyspepsia, anorexia, weight loss, abdominal pain and discomfort, lump abdomen, nausea, vomiting, epigastric tenderness or any other gastrointestinal symptoms are thoroughly examined clinically. After obtaining written consent from patients and following obtaining clearance from Institution Ethical's committee, detailed history, clinical examination and relevant investigation reports were taken. Light Microscopy Was done to grade histological types of malignancy. Biopsy samples were taken gently (by testing with needle) from the biopsy forceps. (A) Then they were placed with proper orientation (sub mucosa downward) on a square shaped small bit of filter paper. (B) Fixative and fixation: Next, they were put slowly into the vial containing 10% Normal saline as fixative and kept for 24 hours for proper fixation (C) Processing to obtain paraffin blocks- the tissue was processed by automatic tissue processor and paraffin blocks were made. (D) Sectioning - multiple sections were made of 0.5-0.6 mm. thickness at different levels to get adequately oriented material in the deeper cuts (E) Staining : the sections were stained with hematoxylin and eosin (H&E), Special stain such as periodic acid Schiff (Schiff 1868, McManus 1946), Immunohistochemical stain like CD-20 were considered when necessary. **Result:** Our study revealed a male to female ratio was 2.5:1. Distribution of age varied from 35 to 85 years. Majority of the men were in the age group of more than 50 years (72.72%) and majority of females were of 50-80 years (68%). Nearly 8.6% patients had a positive family history. The most common site of gastric cancer in our study was antrum (53.4%) followed by cardia (16.5%). The most common histological type was adenocarcinoma (89.6%). Most of our patients presented in locally advanced stage (43.3%). **Conclusion:** Increasing the awareness regarding the aetiology and varied clinical presentation among general population and health providers is needed for prevention and early detection. High risk subset may be undertaken for screening the disease.

INTRODUCTION

Gastric carcinoma is the second most common tumor in the world.^[1] In India, malignancy of stomach ranks 7th in males, Gastric carcinoma is the 5th cause of death in male and 6th cause of death in female due to the cancer causing death in India.^[2] Approximately 90% of gastric cancers are adenocarcinomas, and rest 10% are lymphoma,

leiomyosarcoma etc.^[3] Stomach cancer begins when cancer cells form in the inner lining of your stomach. These cells can grow into a tumor. Also called gastric cancer, the disease usually grows slowly over many years. Stomach cancer is most often seen in people in their late 60s through 80s. Almost all stomach cancers (about 95%) start in the glandular tissue that lines the stomach.^[4] The tumor may spread along the stomach wall or may grow

directly through the wall and shed cells into the bloodstream or lymphatic system. Once beyond the stomach, cancer can spread to other organs.^[5] Stomach cancers are classified according to the type of tissue they start.

- Adenocarcinomas -- the most common -- start in the glandular stomach lining.
- Lymphomas develop from lymphocytes, a type of blood cell involved in the immune system.
- Sarcomas involve the connective tissue (muscle, fat, or blood vessels).
- Other types include carcinoid, small cell carcinoma, and squamous cell carcinoma
- Metastatic cancers from breast cancer, melanoma, and other primary sites of cancer are also seen in the stomach.^[6]

Diagnosis of gastric malignancy is based on clinical, biochemical, radiological and pathological parameters. A good number of cases of stomach malignancy are asymptomatic.^[7] There are few studies in our country till date which cover up all the regions of India, relating the food habits, blood groups etc. with varying incidences of stomach malignancy in different regions.^[8] The rational approach for a clinicopathological correlation of gastric malignancy should be the proper combination of all regional datas, related with basic clinicopathological longitudinal studies of gastric malignancy done on people from different ethnic groups and geographic region of this vast country for prolonged period, so that the picture of gastric malignancy may be clear in this country.^[9]

MATERIALS AND METHODS

This observational study was undertaken in the Department of Pathology, SKMCH, Muzaffarpur, and Bihar from June 2018 to July 2019. Patient in the age group of 35 to 85 years were selected from the outdoors of the Gastroenterology Departments retrospectively. They were selected on the basis of clinical and pathological pictures they produced. At outpatients' department, patients coming with symptoms of dyspepsia, anorexia, weight loss, abdominal pain and discomfort, lump abdomen, nausea, vomiting, epigastric tenderness or any other gastrointestinal symptoms are thoroughly examined clinically.

Inclusion Criteria

1. Patients with endoscopic biopsy positive gastric malignancy and available clinical records including relevant investigations.
2. Age group 35 to 85years.

Exclusion Criteria

1. Cases with ambiguous reports of gastric malignancy.
2. Endoscopy done outside the Institute.
3. Follow up and collection of clinical data not available.

After obtaining written consent from patients and following obtaining clearance from Institution Ethical's committee, detailed history, clinical examination and relevant investigation reports were taken. History of presenting complaints including pain abdomen, anorexia, weight loss, vomiting etc. were taken. History of habits including smoking and alcohol intake; drug history including H2 blockers, antacids, proton pump inhibitors; socio-economic history including occupation, family income etc. Light Microscopy Was done to grade histological types of malignancy. Biopsy samples were taken gently (by testing with needle) from the biopsy forceps. Then they were placed with proper orientation (submucosa downward) on a square shaped small bit of filter paper. B) Fixative and fixation: Next, they were put slowly into the vial containing 10% Normal saline as fixative and kept for 24 hours for proper fixation C) Processing to obtain paraffin blocks- the tissue was processed by automatic tissue processor and paraffin blocks were made. D) Sectioning - multiple sections were made of 0.5-0.6 mm. thickness at different levels to get adequately oriented material in the deeper cuts E) Staining: the sections were stained with hematoxylin and eosin (Harri's), Special stain such as periodic acid shiff (Schiff 1868, McManus 1946), Immunohistochemical stain like CD-20 were considered when necessary.

Immunohistochemistry: Reagents Required:

- Standard solvents used in immunohistochemistry
- 50 mM tris buffered saline (TBS) pH 7.3.
- Antigen retrieval solutions
- Enzyme retrieval solutions

Statistical Analysis

Data was analysed by entering in Microsoft excel 2007 data sheets. Statistical software's such as Graph Pad Prism5 were used to calculate significance and other variables. P value < 0.05 was considered significant. Fisher's exact test was used to analyse data. Total number of cases was 52. (n= 52).

RESULTS

Our study revealed a male to female ratio was 2.5:1. Distribution of age varied from 35to 85 years. Majority of the men were in the age group of more than 50 years (72.72%) and majority of females were of 50-80 years (68%). Nearly 8.6% patients had a positive family history. Dietary history of intake salted, fermented fish was present in 56.25% of patients, whereas history of consumption of smoked meat was found in 68.8% of patients. Only 18.7% of patients in our study had history of regular consumption of fresh fruits. About 24.4% of the patients had poor drinking water source. Nearly, 43.75 % of males and 18.75% of females had

smoking history. Combined consumption of alcohol and smoking was present in 43.5% of patients. Vague abdominal discomfort was the most common presenting symptom in 58.4% of patients. The most common site of gastric cancer in our study was

antrum (53.4%) followed by cardia (16.5%). The most common histological type was adenocarcinoma (89.6%). Most of our patients presented in locally advanced stage (43.3%).

Table 1: Correlation of age and sex of patients with gastric malignancy

Age(yrs)	Male	Female	total
35<	1	0	1
35-44	2	5	7
45-54	9	2	11
55-64	16	3	19
65>	11	3	14
	39	13	52

Table 2: Sub-sites of gastric malignancies

SUB – SITE	ADENO CA	OTHERS	TOTAL
Prepylorus , Antrum	30	4	34(65.38%)
Fundus	8	2	10(1.92%)
Body	4	2	6(11.53%)
Entire Stomach	2	0	2(3.84%)

Table 3: Endoscopic presentation and histological diagnosis of different malignancies

ENDOSCOPIC PRESENTATION	ADENO CA	OTHERS	TOTAL
Ulcerative	22	3	25(48.07%)
Infiltrative	15	2	17(32.69%)
Polypoid	8	2	10(1.92%)

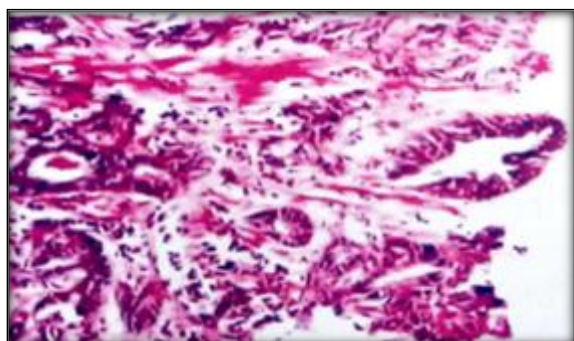


Figure 1: Moderately differentiated adenocarcinoma

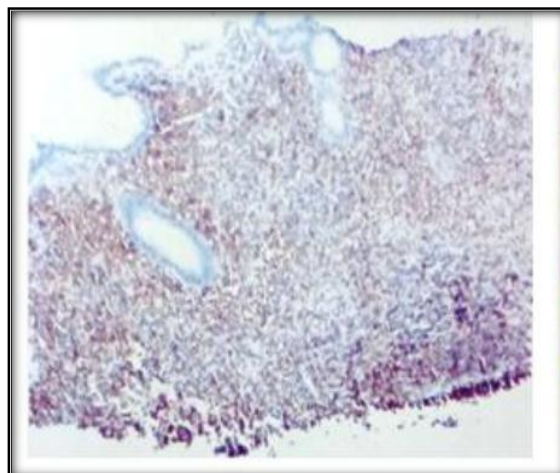


Figure 3: MALT Lymphoma Showing CD-20 Positivity lesions (H & E, x100)

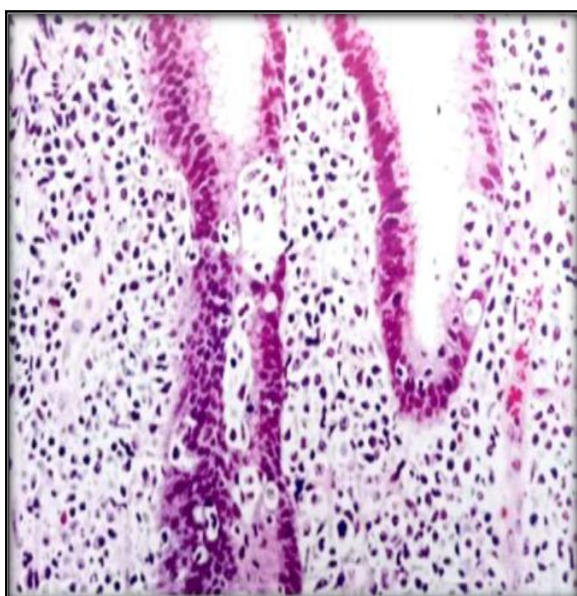


Figure 2: PAS stain positivity for signet ring stomach (100x) adenocarcinoma of stomach (H & E, 100X)

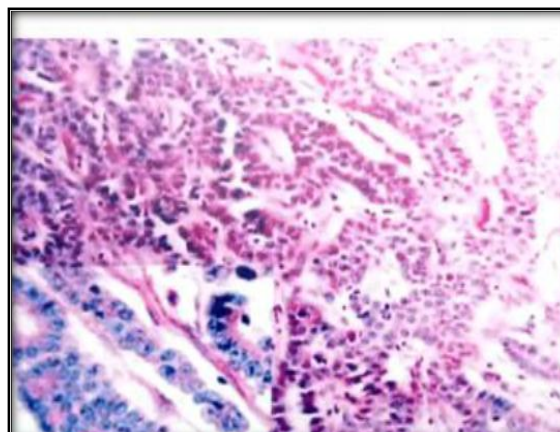


Figure 4: GIST – Stomach (H & E,100x) with inset showing lesions (H & E, x100)

DISCUSSION

There is worldwide variation regarding the incidence and patterns of gastric cancer. Countries of Southeast Asia, Japan, South Korea and China have noted a high incidence of gastric cancer. The overall incidence of gastric cancer in India is less compared to rest of the world. In North-East region very high incidence of all sites of cancers in general and tobacco related cancers in particular have been reported. Pattern of tobacco use is noted to be different in North-East region. The genetic susceptibility of cancer due to ethnic variation related to polymorphism and mutation in autosomal recessive genes has been suspected. Certain dietary and tobacco related carcinogens are known to act as co-factors to bring out genetic changes.^[10]

In our study, the peak incidence of gastric cancer was in age group older than 50 years old (81.81%). Also male predominance was noted with male to female ratio of 2.5/1, which is comparable with other studies. Presumably, this male preponderance could be attributed to the high incidence of smoking (30) found among the males, with male to female smoking ratio of 17/33 in our study. About 11.5 % of patients in our study had a positive family history. However, many other studies have reported a positive family history of 22% of patients. Our low estimate of family history could have been because of poor reporting by patient attendees. An overwhelming majority of patients (58.6%) in our study had a history of consumption of smoked meat, and 52.52% of patients had history of consumption of dried, fermented fish. Whereas, only 21.9% of the patients had a history of regular consumption of fresh fruits. Consumption of dried fish has found to increase the risk of gastric cancer (41). It is also well known that high consumption of smoked meat and decreased consumption of fresh fruits increases the risk of gastric cancer (11). The most common presenting symptoms in our study abdominal pain (72.2%) and weight loss (55.03%), which were similar to other studies.^[11,12,13] Our findings revealed that most common site of tumour was antrum (65.38%) followed by cardia (17.1%) which are consistent with many other studies.^[6,7] However, increased incidence of tumour occurrence in gastro-oesophageal junction has been noted in many western studies.^[5]

Considering the histological type, majority (85.32%) was found to be adenocarcinoma consistent with other studies.^[14,15] Majority of the tumours (27.46%) in our study were poorly differentiated, similar to other studies.^[16,17] Studies have shown that elder patients were more likely to have well or moderately differentiated tumours and young patients were more likely to have poorly-differentiated tumour.^[18,19] Similarly, in our study 7 out of 15 patients with <58 years old of age had poorly differentiated tumours. Early gastric cancer was present in 6.8% cases and majority (75.7%) had locally advanced

gastric cancers at the time of presentation in our study. This figure is less compared 9-19 % seen in western countries and far less compared to the prevalence of Japan where mass screening programmes for gastric cancer are in place.^[20,21] This highlights the need for aggressive endoscopy and biopsy for minimally symptomatic patients to improve the survival.

CONCLUSION

Our analysis suggests that poor dietary habits such as smoked meat, dried fish and excessive use of tobacco are associated with high occurrence of gastric cancer in this part of the India. Symptoms of weight loss and abdominal pain in elderly population should alert the healthcare providers about the possibility of gastric cancer. Increasing the awareness regarding the aetiology and varied clinical presentation among general population and health providers is needed for prevention and early detection. High risk subset may be undertaken for screening the disease.

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