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Research Article

A Clinicopathological Study Of Gastric Carcinoma Cases In Uttar Pradesh, India

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Abstract
Introduction: Gastric cancer is the fifth most commonly diagnosed cancer globally and ranks as the fifth leading cause of cancer-related deaths. This study aims to identify the various clinicopathological patterns of gastric carcinoma and facilitate early identification based on clinical and pathological criteria.
Material and Methods: This study includes 50 cases of gastric carcinoma admitted to the Department of Surgery at MRAMC and Hospital, Ambedkar Nagar. The cases consist of patients who were either clinically diagnosed or those who underwent laparotomy, resulting in a histological diagnosis.
Results: Most patients (44, 88%) presented at stage 4 of the disease. Approximately 60% of the gastric cancer patients were in their 5th and 6th decades of life. The average age was 51.25 years (SD = 12.2). Gastric carcinoma predominantly affected men (36, 72%) compared to women (14, 28%), resulting in a male-to-female ratio of 2.6:1. The intestinal variant was the most common histological type of adenocarcinoma observed, while the diffuse variant was either poorly differentiated or undifferentiated.
Conclusion: Further research into the causes of gastric cancer is essential for a better understanding of the disease. With deeper insights, we may be able to develop more effective preventive measures, ultimately saving lives.

Keywords: Gastric cancer, Clinicopathological, Study, India

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Introduction

According to the Globocan 2022 data published recently, gastric cancer was the fifth most commonly diagnosed cancer globally in 2022, accounting for 4.9% of all new cancer cases. Additionally, it ranked as the fifth leading cause of cancer-related deaths, contributing to 6.8% of cancer fatalities worldwide. [1, 2] Age-standardized incidence rates ranged from 7.7–11.2 per

100,000 in men to 3.3–4.3 per 100,000 in women. In India, GC remains the fifth most common cancer types, accounting for 7.2% of all cancer cases (3). Carcinoma stomach, a challenging disease to the surgeon and pathologist for past so many years, is a common surgical condition seen in hospital outdoor (OPD) patients. Diagnosis of gastric malignancy is based on clinical, biochemical, radiological and pathological parameters. (4) Recent advances in molecular medicine have not only shed light on the carcinogenesis of gastric cancer, but also offered novel approaches regarding prevention, diagnosis and therapeutic intervention. (4)

This study aims to identify the various clinicopathological patterns of carcinoma stomach and their impact on treatment policy & early identification of carcinoma stomach on clinical and pathological basis, to improve the quality of life of such patient. In this study area (Ambedkar Nagar) awareness about cancer stomach *is* very low, most of the patients who come in OPD are in late stage of the disease when only palliation is possible. Early identification of the carcinoma stomach is challenging to the surgeon and medical professionals to strive toward reduction of the discrepancy between incidence and operability.

MATERIAL AND METHOD

The MRAMC and hospital, Ambedkar Nagar caters to the need not only local population but also people living in surrounding districts.

This study consists of 50 cases of carcinoma stomach which were admitted in the department of surgery. The cases included are those which have been either clinically diagnosed or those on whom a Laparotomy has been performed and a histological diagnosis obtained.

As the study consist mainly of clinical and pathological study main efforts were made to extract correct history from the illiterate and ignorant class of people among whom the carcinoma of stomach is commonly encountered.

Sociodemographic data of each patient was recorded. The complaints were noted in chronological order according to the duration. In personal history due emphasis was also given to dietary habits, habits of chewing or smoking tobacco and alcohol.

Chemical grades of anemia, cachexia, jaundice, & lymphadenopathy were important points in general examination. In local examination, the presence of lump, signs of gastric outlet obstruction and ascites were noted.

Abdomen was examined as a routine to search for a lump and carcinoma. Rectal &vaginal examination was done as a routineprocedure for any evidence of metastasis. Virchow's group of lymph nodes was examined clinically. After this the lesion is clinically classified as operable or inoperable.

Routine blood Investigations, radiology and Histopathology were done. Whatever the treatment the patient had received was recorded, either during his stay in hospital or at the time of discharge. At the time of discharge, the condition was also noted down. All the data are arranged, tabulated and analyzed by standard method of statistics and compared to the previous studies.

Results

Most of the patients 44(88%) presented in the stage 4 of the disease, followed by 4(8%) in Stage 3 and 2(4%) in Stage 2. No cases were reported in stage 1.

Table No. 1: Distribution of stomach cancer cases according to age

-Age in years	Number of cases	Percentage
20-30	4	3%
31-40	7	14%
41-50	16	32%
51-60	15	30%
61-70	8	16%

About 60% of the patients were found to be in the 5th and 6th decade. Average age was 51.25 years (SD=12.2). Stomach carcinoma was mainly disease of men (36, 72%) as compared to females (14, 28%) with M: F ratio of 2.6:1.

Table no. 2: Dietary habits in cases of malignancy

Diet	Number	Percentages
Rice [basi]	36	72%
Rice [non basi]	14	28%
Wheat	20	40%
Chilies	36	72%
Vegetarian	4	8%
Non vegetarian	46	92%

Table shows that most of the patient taking fermented rice [basi], and non-vegetarian, which may be a predisposing factor for the development of carcinoma stomach.

Table 3: Addiction habits in carcinoma stomach cases

Addiction habits	Number of cases	Percentages
Smoking and /or tobacco chewing	20	40%
Alcohol	7	14%
Alcohol & smoking	5	10%
Gudakha	2	4%
No addiction	16	32%

Table 3 shows that smoking and tobacco chewing was found among 40% of cases of carcinoma stomach.

Table 4: Duration of illness in carcinoma stomach cases

Duration in months	Number	Percentages
< 1	5	10%
1-3	32	66%,
4—6	9	18%
7 9	1	2%
10-12	2	4%
12 month & Above	1	2%

Most of the patients come to hospital after 1 to 6 months of the development of symptoms.

Table 5: Clinical presentation in carcinoma stomach cases

Signs & Symptoms	**Number**	**Percentages**
Vomiting	33	66%
Epigastric pain	30	60%
Abdominal lump	19	38%
Anorexia	17	34%
Loss of weight	12	24%
Indigestion	06	12%
Perforation	03	06%
Fever on & off	01	02%
Systemic signs		
Ascites	26	52%
Liver metastasis	06	12%
Peritoneal seedling	02	4%
Supraclavicular lymph node	02	4%
Krukenberg tumour	01	2%
Positive History of acid peptic disease	28	56%

Most common symptoms were vomiting, epigastric pain and abdominal lump. Most of the patients (74%) were having systemic signs and distant metastasis. 56% of patients **were** having previous history of acid peptic disease.

Table 6: Gross pathology of cases of carcinoma stomach.

Morphology of the carcinoma stomach	**Number**	**Percentage**
Ulceroproliferative	28	56%
Ulcerative	12	24%
Polypoidal	7	14%
Diffuse thickening	3	6%
Histologic type		
Adenocarcinoma	48	96%
Gastric lymphoma	1	2%
Nonspecific malignant cells	1	2%

Most of the patients were having ulceroproliferative and ulcerative growth. Most common histologic type was Adenocarcinoma (96%).

Table 7: Sites of the disease in cases of carcinoma stomach.

Site	Number	Percentages
Pylorus & antrum	35	70%
Body	7	14%
Cardia & fundus	6	12%
Multifocal	2	4%

Pylorus and antrum is the main site of carcinoma stomach.

Table 8: Different histologic variant of adenocarcinoma of carcinoma of stomach cases

Histological variant	Number	Percentages
Intestinal	43	89.58%
Diffuse	4	8.33%
Signet ring cell carcinoma	1	2.08%

Intestinal variant was the most common histologic type of adenocarcinoma stomach observed.

Table 9: Relationships between histologic type and histologic grade of cases of carcinoma stomach.

Histologic type	Well differentiated	Moderately differentiated	Poorly differentiated	Undifferentiated
Intestinal	3(6%)	26(52%)	17(34%)	
Diffuse			3(6%)	1(2%)

The diffuse variant is either poorly differentiated or undifferentiated.

Table 10: Treatment taken by cases of carcinoma stomach.

Treatment	
Partial gastrectomy	
Feeding jejunostomy	
Gastro-jejunostomy	
Non operative	

Feeding jejunostomy was done in 20% of the cases.

DISCUSSION

The incidence and mortality rates for gastric cancer can differ significantly across various regions. Japan, South America, and Eastern Europe report the highest rates of stomach cancer, while in our country, the incidence is relatively low. There were about 145,000 new cases in 2001 in India. The esophagus was the most common site for cancer, with 24,925 cases in men and 18,608 in women. Following that, stomach cancer was also significant, with 23,785 cases in men and 11,890 in women. Additionally, the age-adjusted rates (AAR) for gastric cancer in urban areas ranged from 3.0 to 13.2, which is lower compared to global rates of 4.1 to 95.5. It's also noted that this disease predominantly affects males.[5]

In India, there is a notable difference in the incidence of gastric carcinoma, with Southern India experiencing rates that are four times higher than those in Northern India. This variation highlights the importance of regional factors in the prevalence of certain health conditions. [5]

Age Incidence:

Gastric cancer is rare under the age of 30 and it is a disease of advanced age. According to R. K. Phukan (2004) [6], Mizoram has a high prevalence of stomach cancer, with the median age of diagnosis being 58 years for males and 57 years for females. The age range for these cases spans from 23 to 92 years, indicating that stomach cancer can affect individuals across a wide age spectrum.

The study in Kashmir [7] indicates that most patients diagnosed with stomach cancer were in their 50s, with the youngest being 20 years old. In your study, you found that the youngest patient was 22 and the oldest was 70, with about 60% of patients in their 5th and 6th decades of life. The average age of patients in your study was 51.25 years, with men averaging 52.75 years and women averaging 46 years. This data highlights the age distribution of stomach cancer cases and suggests that it can affect a range of ages, though it is more common in middle-aged individuals. While the study indicates that females may be affected at an earlier age compared to males, it's important to note that conclusions drawn from a small sample size may not be representative of the broader population. More extensive research would be needed to confirm these findings and understand the trends in stomach cancer incidence among different genders and age groups.

Sex incidence:

In your study, 72% of the patients with carcinoma stomach were males, while 28% were females, resulting in a male-to-female ratio of 2.6:1. This aligns with the broader findings in India, where the National Cancer Registry Program (NCRP) reports a male-to-female ratio of 2:1 for stomach cancer. Additionally, R. K. Phukan's study [6] shows a similar ratio of 2.3:1. These statistics highlight that stomach cancer predominantly affects males, although it's important to continue researching and monitoring trends in both genders.

Occupation incidence:

The cohort study in Sweden [8] highlights the influence of socioeconomic status on the occurrence of gastric cancer, and your findings support this by showing that a significant majority (70%) of the patients in your study were either farmers or laborers, indicating that they belong to a lower socioeconomic status. This correlation suggests that socioeconomic factors may play a role in the risk and prevalence of gastric cancer, which is a crucial area for further research and public health

initiatives.

Dietary habit:

Out of 50 patients 46 patients were non vegetarian, taking meat in any form and only 4 patients were vegetarian who never taken meat.

A multicentric study in Germany in 1991 shows that preservation of meat by smoking it with spruce compared to no home smoking of meat, were significantly associated with an increased stomach cancer risk.[9]

An epidemiological study in India shows that in south Indian consumption of high amount of rice with chilies is may be a risk factor for the development of carcinoma stomach. [10] It has been observed in this country that wheat eating communities such as northern Indians have a very low incidence of carcinoma stomach. [5]

The epidemiological evidence suggests that gastric carcinoma is a preventable condition, and improving nutrition can play a significant role in reducing its incidence. By focusing on elevating the standard of living and ensuring better access to nutritious food, we can potentially lower the risk of developing stomach cancer. This approach not only addresses the health of individuals but also contributes to the overall well-being of communities.

Addiction: -

Out of 50 patients were smokers, 7 (14%) were alcoholic,5(10%) were both smoker and alcoholic and 16(32%) patient having no addiction. From this finding it appears that stomach carcinoma is common in smokers or in persons who addicted to alcohol, but the study is too small to offer any definite conclusion.

A review in Malaysia[11] also shows that, stomach cancer risk in men rose with smoking while a study in Mumbai (Rao et al) [12] did not find any relation between tobacco use and risk of gastric cancer.

Clinical picture: -

The main complaints were vomiting (66%), epigastric pain (60%), abdominal lump (38%) and anorexia (34%) In our study the most common symptoms were vomiting which indicate that most of the lesions are present at pylorus and antrum.

A study in Northern Punjab in 2009 reported pain in epigastrium the most common symptom (36%), followed by vomiting (25%) and mass in abdomen (16%).[13]

Most of the patients 26(52%) were had ascites, while 6(12%) patients were having liver metastasis, 2(4%) patients were having peritoneal seedling,2(4%) patients were having supraclavicular lymph node and 1 (2%) patient was having Krukenberg tumour. Specific clinical signs or symptoms suggest a more advanced stage of gastric cancer. When such signs are present, it often indicates that the disease has progressed significantly, making it more challenging to treat effectively. In cases of extensive and incurable disease, the focus may shift to palliative care to improve the quality of life for the patient. [14]

The prognosis for gastric cancer remains poor except in a few countries like in Japan where stomach cancer is endemic screening of the high-risk population is done.

Gross pathology: -

In our study gross morphology was based on Borrmann classification. Seven cases (14%) were polypoidal (type 1), 12 (24%) were ulcerative [type 2], 2(56%) were ulceroproliferative [type 3] and 3(6%) were diffuse type [type 4].

The gross morphologic appearance of gastric cancer and the degree of histological differentiation are not independently prognostic variables. [14] Most of the (35, 70%) lesions were at the pylorus and antrum followed by body 7(14%) and then cardia and fundus 6(12%). Most of the literature also says that pylorus and antrum are the most common site of the carcinoma stomach. A study in Kashmir [7] also shows that pylorus is the most common site. Some studies [15] shows that there is increased incidence of cancer of cardia and proximal part of stomach in some industrialized countries. There has been concomitant rise in the incidence of esophageal cancer, which suggests that gastric cardia shares the same risk factors, namely obesity, gastric reflux and subsequent Barrett's esophagus. While a study [15] in India shows no increase incidence of proximal gastric cancer.

Histo-pathology:-

In our study out of 50 patients 48(96%) were having adenocarcinoma stomach, 1 (2%) were having gastric lymphoma and 1 (2%) were having nonspecific malignant cells. Approximately 95% of all malignant gastric neoplasms are adenocarcinomas, and in general, the term gastric cancer refers to adenocarcinoma of the stomach. Although no normal lymphoid tissue is found in the gastric mucosa, the stomach is the most common site for lymphoma of the gastrointestinal tract. [14]

Our finding simulate to the finding of Islam et al [16] who found that 98.27% were gastric adenocarcinoma and l. 73% were non-Hodgkin's lymphoma.

Lauren divides gastric cancers into either intestinal or diffuse forms. Intestinal variants are the most common type of adenocarcinoma as cited in literature. In our study out of 50 patients 43(89.58%) patients were having intestinal type and 4(8.33%) patients were having diffuse type. Naseem Chanda et al [7] found that intestinal type of carcinoma was seen in 28%, diffuse in 27.3% and mixed in 8% cases.

According to Broder's classification, in our study most of the patients were having either moderately differentiated (26,52%), or poorly differentiated (20,400/0) and only 3(6%) patients were having well differentiated and 1 (2%) patient was having undifferentiated carcinoma stomach. All the diffuse variant were either poorly differentiated or undifferentiated while most of the intestinal variant were moderately or poorly differentiated. This shows that diffuse variants have poor prognosis, as cited in literature.[17]

Islam et al [16] found that most (57.12%) of the gastric adenocarcinomas were poorly differentiated, (12.8%) were well differentiated and (13.44%) were moderately differentiated.

Stage of the disease:

In this study out of 50 patients 44(88%) were presented in advance stage (stage 4), only 6 (12%) were presented in early stage. A study in south India also shows the late presentation of carcinoma of stomach [18]. Presentation of carcinoma stomach in advance stage is responsible for the poor prognosis.

Treatment:

Because of the late presentation of the carcinoma stomach, in our study most of the patients were inoperable at the time of presentation. Out of 50 patients only in 6 (12%) patients, curative surgeon (partial gastrectomy) was done, in 16 (32%) patients' palliative surgery was done and in 27 (54%) patients only biopsy was taken, and patients were submitted for palliative chemotherapy. Three patients were presented with perforation peritonitis of which in 2 patients primary repair and omentopexy were done. These patients were diagnosed as malignancy in post-operative period. In one patient only continuous peritoneal lavage was done and the patient expired on the 4th day of admission. This patient was already diagnosed with carcinoma stomach by endoscopic biopsy by private practitioner but at the time of presentation patient general condition was very poor to do any definitive procedure. Out of 6 partial gastrectomy patients one patient developed a leak from an anastomotic site, and patients managed conservatively and recover.

There is no perioperative mortality in this study, but study is too small to give any conclusion. In the study by Sambhashiva K in south India similar results were reported.[18] In another study from eastern India, around 73.4% of patients underwent radical surgery. Most patients (50%) had an eventless post-operative period, and 76% received peri-operative chemotherapy. Also, 20% of patients received adjuvant chemoradiation. These findings are comparable to our study. [19] As highlighted in the 2024 literature, while surgery continues to be the primary treatment option, the roles of immunotherapy and targeted therapies are gaining importance in managing gastric cancer. These advancements offer new avenues for treatment, especially for patients who may not be candidates for surgery or who have advanced disease.

Moreover, adopting a multidisciplinary approach post-surgery is crucial for comprehensive patient care. Involving nutritionists can help address dietary needs and support recovery, while psychologists can provide essential mental health support, helping patients cope with the emotional and psychological challenges that often accompany a cancer diagnosis and treatment. This holistic approach can significantly enhance the overall well-being and quality of life for patients.[20] Further research into the causes of gastric cancer could really help us understand the disease better. With more insights, we might be able to develop better preventive measures, which could ultimately save lives.

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