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*Original article*

# Clinical, Endoscopic and Histological Findings of Carcinoma of Stomach

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**ABSTRACT**

**Background:** Carcinoma of the stomach is a major cause of cancer mortality worldwide. The etiology and risk factors for gastric cancer includes environmental and genetic factors. **Methods:** The patients who attended surgical OPD and Gastrointestinal and Minimal Access Surgery Unit with features of suspected gastric cancer, such as hematemesis, weight loss, dyspepsia, dysphagia with fullness of stomach, inability to have a full meal with vomiting, anemia, anorexia, stomach lump, gastric outlet obstruction etc were endoscoped by using flexible upper G.I Endoscope. Study variables include population and socio-demography**,** clinical presentation, endoscopy for location of tumours, appearance, proximal and distal extent of the lesion and histology. **Results:** The maximum number of patients belonged to the age group 61-70 years, accounting for 33.9% of the patients. . Dyspepsia and epigastric pain were the commonest presenting symptoms accounting 79% (49 patients) in this study. Antrum involvement is the commonest accounting 41.93% (26 patients) followed by prepyloric 29.03% (18 patients), body 19.35% (12 patients) respectively. The majority of the tumour were of well differentiated adenocarcinoma comprising of 37.5% (23 patients) followed by poorly differentiated adenocarcinoma comprising 32.8% (20 patients). **Conclusion:** Our study showed that carcinoma of stomach was more common in males than in females, affecting mostly in the fifth to seventh decade of life and the lower socio-economic class. Dyspepsia and epigastric pain were the most common presentation. Gastric carcinoma is commonly located in the distal part of stomach involving the antrum and prepyloric region followed by body.

**KEYWORDS:**Gastric carcinoma, Upper GI Endoscopy, Adenocarcinoma

## INTRODUCTION

Carcinoma of the stomach is a major cause of cancer mortality worldwide. Its prognosis tends to be poor with cure rates little better than 5–10%, although better results are obtained in Japan where the disease is common. The etiology and risk factors for gastric cancer includes environmental and genetic factors. Higher rates of gastric cancer are associated with lower socio-economic status. People with blood group A are more affected by gastric cancer than other blood groups. Dietary factors have received significant attention as potential factors in the development of gastric cancer. Helicobacter pylori infection is potentially damaging to gastric mucosa and is a high risk factor for gastric cancer [1]. H. pylori is uniquely equipped for survival in the hostile environment of the stomach. About 50% of the world's population is infected with H. pylori, amajor cause of chronic gastritis. The same sequence of inflammation to metaplasia to dysplasia to carcinoma is well understood now.It is clear from a variety of well-designed laboratory , clinical and endoscopic studies that H.pylori is indubitably an important factor in the development of gastric cancer.Hence this study is to analyze the different aspects of carcinoma of stomach particularly the clinical features, endoscopic finding and histopathological patterns.

## MATERIALS AND METHODS

This is aCross sectional study, carried out in the Surgical Gastroenterology and Minimal Access Unit, Department of Surgery, Regional Institute of Medical Sciences (RIMS), Imphal, Manipur. Total number of cases included for the study is 62. The study duration is for two years where cases

of gastric carcinoma and who fulfills the eligibility criteria were included.

Those patients who were 18 years and above with histologically proven case of carcinoma of stomach and from whom inform consent can be taken were included in the study. Study variables include population and socio-demography**,** clinical presentation, endoscopy for location of tumours, appearance, proximal and distal extent of the lesion and histology.

The patients who attended surgical OPD and Gastrointestinal and Minimal Access Surgery Unit with features of suspected gastric cancer, such as hematemesis, weight loss, dyspepsia, dysphagia with fullness of stomach, inability to have a full meal with vomiting, anemia, anorexia, stomach lump, gastric outlet obstruction etc were endoscoped by using flexible upper G.I Endoscope FUJINON 2200. The patients were advised to come nil per oral along with HBsAg, HCV and HIV report on the day of endoscopy. Before the procedure, the patient was explained about the procedure to be undertaken, the risk, benefits and the complications. Informed consent was taken in all the cases.

Four to six pieces of tissue samples were taken endoscopically from the suspected site of malignancy and put in a vial containing 10% formal-saline. This was then sent for histopathological study to confirm the diagnosis of gastric cancer and its type.

The data collected was entered in a data based programme namely IBM SPSS Statistics 21 developer (SPSS, Inc., Chicago, IL, USA). Descriptive statistics like percentages and mean were used. This software was used for the analysis of the data and Microsoft word and Excel have been used to generate tables and charts.

## RESULTS

The different aspects of carcinoma of stomach particularly the clinical features, endoscopic finding and histopathological patterns had been analyzed in the study.

Ages ranging from 18-89 years are divided into seven categories as shown in Table 1. The maximum number of patients belonged to the age group 61-70 years, accounting for 33.9% of the patients. The youngest patient was 31 years old male and the oldest patient was 89 years old male. The mean age of the patients was 57.40 years i.e,56.54 years for male and 58.52 years for female. The sex ratio of male to female is 1.8:1.Carcinoma of stomach was slightly increased in male then in female. 29(46.8%) patients gave history of chewing tobacco product.

**Table 1. Age and Sex distribution of the study population**

| **Age group (in years)** | **Male(%)** | **Female(%)** | **Total(%)** |
|---|---|---|---|
| 18-30 | Nil | Nil | Nil |
| 31-40 | 4(11.76 | 2(7.69) | 6(9.67) |
| 41-50 | 10(29.41) | 8(30.76) | 18(29.03) |
| 51-60 | 7(20.58) | 4(15.38) | 11(17.74) |
| 61-70 | 11(32.35) | 9(34.61) | 20(32.25) |
| 71-80 | 3(8.82) | 3(11.53) | 6(9.67) |
| 81-90 | 1(2.94) | Nil | 1(1.61) |
| Total | 36 | 26 | 62 |

Out of which 20 patients were male and 9 patients were female. The duration ranges from 2-35 years. 21(33.9%) patients gave history of smoking. Male predominated female.(ie,20 male and 1 female). 24(38.7%) patients gave history of alcohol consumption.

Most of them were chronic alcoholic and only few patients gave history of recent quitting. The duration of alcohol consumption ranges from 1-38 years. Out of which 23 patients were males and 1 female. The incidences of smoking, alcohol and tobacco chewing are shown in Table 2.

The presenting clinical features of the patients were noted and categorized systematically in Figure.1. Dyspepsia and epigastric pain were the commonest presenting symptoms accounting 79% (49 patients) in this study, followed by anemia 77.4% (48 patients), anorexia 64.51% (40 patients), weakness 56.45% (35 patients), weight loss 46.8% (29 patients), vomiting 42.2% (28 patients), hematemesis 30.6% (19 patients) and 22.6% (14 patients) each with visible peristalsis and gastric outlet obstruction respectively.

The distal part of the stomach namely the antrum and prepyloric region were more commonly involved. Antrum involvement is the commonest accounting 41.93% (26 patients) followed by prepyloric 29.03% (18 patients), body 19.35% (12 patients) respectively.4 (6.45%) patients had involved both body and antrum, 2 (3.22%) patients had involved antrum and body. The tumour location was shown in Table 4.

**Table 2: Personal habit or addiction**

| **Personal Habits** | **Male(%)** | **Female(%)** | **Total(%)** |
|---|---|---|---|
| **Smoking** | 20(95.2) | 1(4.8) | 21(33.9) |
| **Tobacco chewing** | 20(68.9) | 9(31.1) | 29(46.8) |
| **Alcohol** | 23(95.8) | 1(4.2) | 24(38.7) |

**Table 3: Showing clinical sign and symptoms**

| Clinical symptoms or signs | Male (%) | Female (%) |
|---|---|---|
| Anemia | 27(75) | 21(80.7) |
| Anorexia | 27(75) | 13(50.0) |
| Dyspepsia | 28(77.7) | 20(76.9) |
| Weakness | 13(36.1) | 16(61.5) |
| Vomiting | 18(50.0) | 10(38.4) |
| Epigatric pain | 20(55.5) | 25(96.1) |
| Hematemesis | 15(41.66) | 4(15.3) |
| Visible peristalsis | 10(27.7) | 3(11.5) |
| Weight loss | 15(41.66) | 12(46.1) |
| Gastric outlet obstruction | 10(27.7) | 3(11.5) |

**Table 4: Tumour location**

| Tumour location | No. of patients (Percentage) |
|---|---|
| Prepyloric | 18 (29.03%) |
| Antrum | 26 (41.93%) |
| Body | 12 (19.35%) |
| Prepyloric and Antrum | 2 (3.22%) |
| Antrum and Body | 4 (6.45%) |
| Total | 62 |

The tumour morphology or appearance was studied endoscopically and found out to be predominantly ulcero-proliferative type accounting 37.1% (23 patients) followed by ulcerative type 32.3% (20 patients), proliferative type 21% (13 patients) and diffuse type 9.7% (6 patients) respectively, thus indicating more toward the Lauren's intestinal type than toward the diffuse type.

A minimum of 4-6 endoscopic biopsy was taken from the edge of the lesion and mount it in 10% formal-saline and sent it for histopathological examination. The tumour were histologically graded accordingly. The majority of the tumour were of well differentiated adenocarcinoma comprising of 37.5% (23 patients) followed by poorly differentiated adenocarcinoma comprising 32.8% (20 patients) and moderately differentiated adenocarcinoma comprising of 30.6% (19 patients) respectively as shown in Table 5.Histologically the tumour were classified into different Lauren's type.

Intestinal type outnumbered diffuse type in these study with 59.68% (37 patients) to 40.32% (25 patients). In this study, all the patients had inclusively adenocarcinoma. Tubular adenocarcinoma, being the most common comprising of 37.09% (23 patients) followed by papillary adenocarcinoma 29.03% (18 patients), signet ring adenocarcinoma 22.58% (14 patients) and mucinous adenocarcinoma 11.29% (7 patients).

**Table 5: Showing Tumour grade**

| Tumour grade | No. of cases (Percentage) |
|---|---|
| Well differentiated adenocarcinoma | 23 (37.5%) |
| Moderately differentiated adenocarcinoma | 20 (32.8%) |
| Poorly differentiated adenocarcinoma | 19 (30.6%) |
| Total | 62 |

## DISCUSSION

A total No. of 62 cases who had attended in Gastrointestinal and Minimal Access Surgery Unit with features of carcinoma of stomach and proven with endoscopic biopsy histopathologically were included in the study. The purpose of this study was to find out the clinical presentation, endoscopic appearance of the tumour and histopathological finding in carcinoma of stomach.

The incidence of gastric cancer increases with age. Relatively few cases were being reported before 30 years of age, with a sharp increase occurring predominantly between the fourth and sixth decade of life. The male to female ratio is 2:1 in the advancing ages. It affects mostly the lower socio-economic classes worldwide. Chattopadhyay SD et al [2] described the prevalence of carcinoma stomach in a tertiary referral centre in eastern India and its correlation with endoscopic findings. Of the total 165 cases of carcinoma stomach, highest number of cases (24.8%) were among 40-49 years of age, followed by 50-59 years (23.7%). The male sex (67.6%) and patients with low socio-economic background (75.7%) were the worst sufferer. Bautista MC [3] et al also described the male : female ratio differed significantly between the younger and older patient groups (0.84 in age <50 years vs. 1.52>60 years. More younger patients were Hispanic (54% patients <40 years vs. 19% patients ≥70 years, while more older patients were Caucasian (49% patients ≥70 years vs. 15% patients <40 years)

In our study the age of the patients varied from 31 to 89 years. The peak age incidence of gastric cancer in this study was found to be in the seventh and fifth decade of life, which is similar compared to the findings in developed countries. Mean age was 57.40 years. There were 35 males and 27 females with a 1.8:1 sex ratio. The mean age of the males (56.45 years) were slightly higher than that of the females (43.54 years). The youngest patient in this study was 31 years old male and the oldest was 89 years old male. A strong association with socio-economic status has been frequently observed, with individuals of lower socioeconomic status having higher risk. Socio-economic status is, of course, not a causal factor, but is a surrogate for many other factors, including sanitary and dietary conditions [4].

As reported in other studies done in developing countries[5,6,7], the majority of patients in this study had low socioeconomic status with poor education and more than three-quarters of them were unemployed. This observation has an implication on accessibility to health care facilities and awareness of the disease. All these finding support the observation of other workers.

The etiopathogenesis of gastric cancer in developing countries is of great interest. It is possibly multifactorial and associated with complex interactions. It is, however, very difficult to know the precise roles of the different factors, such as genetic, premalignant lesions, H. pylori infection and diet [8].The association between chronic H. pylori infection and the development of gastric cancer remains controversial. There is increasing evidence to suggest that certain H. pylori, containing a gene called CagA, associated with cytotoxin expression, are more strongly associated with gastric cancer.

Prospective studies on cigarette smoking, use of other tobacco products and stomach cancer mortality in US adults have demonstrated a significant dose-dependent relationship between smoking and gastric cancer risk [9]. There is little support for an association between alcohol and gastric cancer. Diet plays a major role in gastric carcinogenesis. Globally, literature suggests that low-starch vegetables including green yellow vegetables, cruciferous and allium vegetables (garlic and onion) and fruits are considered to be probable protective factors. Limited evidence suggests that pulses (including soy) and selenium are also protective in nature [9,10].Recent decline in the incident of stomach cancer in many countries may be in part explained not only by higher consumption of fruit but also due to highly reduced intake of salt, preserved foods as well as the availability of refrigeration.

In our study 46.8% were found to be associated with tobacco chewing and 33.9% were associated with smoking and 38.7% were associated with chronic alcohol consumption. Surprisingly 100% of the cases took mixed diet. Majority of the patients in this study group were habituated to intake of either smoked fish or meat and fermented fish in their diet regularly. The smoke food contains polycyclic hydrocarbons such as benzopyrene which are probable carcinogens. Pickled food [11], high rice intake, spicy food, excess chilly consumption, consumption of high-temperature foods [12], smoked dried salted meat, use of soda [13] and consumption of dried salted fish have emerged as significant dietary risk factors in various parts of India. These practices are prevalent in southern and eastern states of India where a higher frequency of gastric cases are also observed. In India, not only tobacco smoking but also tobacco chewing is highly prevalent. Tobacco is used in various forms like, hukka, snuff, bidis, cigarettes, taibur, Meiziol, etc. About 229,392,725 adult males and 11,908,517 adult females are estimated to use tobacco in India [14].

Soykan I et al.[15] in their studied found that the most common main presenting symptom was abdominal symptoms in 51 patients, consultation for iron and/or vitamin B(12) deficiency in 36, and non-specific symptoms including intermittent diarrhea in 15 patients. Chattopadhyay SD et al [2] also found out the significant symptoms of presentation in carcinoma of stomach were pain abdomen (84%), weight loss (89%), anorexia (86%), gastric outlet obstruction (40%) while signs were anaemia (100%), epigastric tenderness (60%), lump abdomen and gastric outlet obstruction (40%).

Our study revealed the frequency of clinical features as follows: dyspepsia and epigastric pain are the most common accounting 79%, followed by anemia 77.4%, anorexia 64.51%, weakness 56.45%, weight loss 46.8%, vomiting 45.2%, hematemesis 30.6%, visible gastric peristalsis and gastric outlet obstruction consisting 22.6% each respectively.

However, early symptoms of gastric cancer are non-specific and vague and, therefore, many people in our area who have dyspeptic symptoms are treated for peptic ulcers regardless of the cause of dyspepsia. Subsequently, some of these patients, whose cause of dyspepsia is cancer, are diagnosed with late-stage gastric cancer or one of its complications. Late presentation in our study may be attributed to lack of awareness of the disease, low standard of education, low socioeconomic status, lack of accessibility to health care facilities and lack of screening programs in this region.

Chattopadhyay SD et al[2] studied the Prevalence of carcinoma stomach in a tertiary referral centre in Eastern India and its correlation with endoscopic findings. The study was conducted on 8706 symptomatic patients attending for upper GI endoscopy, of which 165 patients were found to have adenocarcinoma of stomach and 8 patients with other stomach neoplasms. On gross microscopic findings of endoscopy, ulcero-proliferative lesions were highest (80.8%) and antrum was the commonest (46.8%) site of neoplastic lesions. Histologically, adenocarcinoma (95.4%) was commonest.

The common anatomical site for gastric cancer in this study was gastric antrum accounting 41.93% followed by pre-pyloric region 29.03%, body 19.35% which is similar to studies done in developing countries[16,17,18] but at variant with what is obtained in developed countries where gastric cardia is becoming the most common site of gastric cancer [19].Grossly, according to the Borrmann classification system, the ulcero-proliferating type 37.8% was the most common tumor in this study followed by ulcerative type 32.3%, proliferative type 21% and diffuse type 9.7% respectively. Similar macroscopic appearance was reported by Cassell and Robinson [20]. However, our findings did not match with those of Schindler et al [21] who found infiltrative lesion (linitisplastica) to be the most common type.

The most common histopathological type of gastric cancer in this study was adenocarcinoma, accounting for 100% of cases. In the present series of 62 cases, histopathological examination of the specimen of the was graded by Broeder's classification into grade-I(well differentiated) to grade-VI(anaplastic type). 23 (37.5%) patients had well differentiated adenocarcinoma, 20 (32.8%) patients had poorly differentiated adenocarcinoma and 19 (30.6%) patients had moderately differentiated adenocarcinoma. Out of 62 cases, 37 (59.67%) had 'Intestinal type' of adenocarcinoma and 25 (40.32%) cases had diffuse pattern in our study.

We have not encountered any anaplastic (grade-VI) carcinoma in our series. In this study, all the patients had inclusively of adenocarcinoma type. Tubular adenocarcinoma being the most common comprising of 37.09% (23 patients) followed by papillary adenocarcinoma 29.03% (18 patients), signet ring adenocarcinoma 22.58% (14 patients) and mucinous adenocarcinoma 11.29%. More than half of the gastric adenocarcinomas in this study were of the intestinal type, based on Lauren classification.

## CONCLUSION

The present study showed that carcinoma of stomach was more common in males than in females, affecting mostly in the fifth to seventh decade of life and the lower socio-economic class. A significant association of carcinoma of stomach was noticed with the intake of smoked food. Alcohol, smoking and chewing of tobacco products were also significant contributors. Dyspepsia and epigastric pain were the most common presentation.

Other common presenting features were weakness, anorexia, vomiting, weight loss, hematemesis and gastric outlet obstruction. Gastric carcinoma is commonly located in the distal part of stomach involving the antrum and prepyloric region followed by body. Majority of the carcinoma of stomach are of ulcero-proliferative type followed by ulcerative type, proliferative type and diffuse type. It is mostly of Lauren's intestinal type with well differentiated adenocarcinoma.

**Competing interest:** The authors declare that they have no competing interests.

## REFERENCES

1. Yuko K and Daniel T. Stomach. In: Bunicardi FC, Dana KA, Billiar TR, John GH, Jeffrey BM, Raphael EP. editors. Swartz's priciples of Surgery. 9th ed. United states of America: McGraw Hill Medicals; 2010.pp.1035-98.
2. Chattopadhyay SD, Singhamahapatra RK, Biswas RS, Sengupta TK, Bandopadhyay A, Nath NC, et al. Prevalence of carcinoma stomach in a tertiary referral centre in Eastern India and its correlation with endoscopic findings. J Indian Med Assoc 2011; 109(5):336-8.
3. Bautista MC, Jiang SF, Armstrong MA, Postlethwaite D, Li D. Impact of age on clinicopathological features and survival of patients with noncardia gastric adenocarcinoma. J Gastric Cancer 2014; 14(4):238-45.
4. Yamagata S, Hisamichi S. Epidemiology of cancer of the stomach. World J Surg 2005; 3:663-9.
5. Oluwasola AO, Ogunbiyi JO. Gastric cancer: aetiological, clinicopathological and management patterns in Nigeria. Niger J Med 2003; 12:177-186.
6. Kitinya JN, Lauren PA, Jones ME, Paljarvi L. Epidemiology of intestinal and diffuse types of gastric carcinoma in the Mount Kilimanjaro area, Tanzania. Afr J Med MedSci 1988; 17:89-95.
7. Ebert MP, Malfertheiner P. Pathogenesis of sporadic and familial gastric cancer: implications for clinical management and cancer prevention. Aliment PharmacolTher 2002; 6:1059-66.
8. Koizumi Y, Tsubono Y, Nakaya N, Kuriyama S, Shibuya D, Matsuoka H, et al. Cigarette smoking and the risk of gastric cancer: a pooled analysis of two prospective studies in Japan. Int J Cancer 2004; 112:1049-55.
9. Chao A, Thun MJ, Henley SJ, Jacobs EJ, McCullough ML, Calle EL, et al. Cigarette smoking, use of other tobacco products and stomach cancer mortality in US adults: the Cancer Prevention Study II. Int J Cancer 2002; 101:380-9.
10. Sumathi B, Ramalingam S, Navaneethan U, Jayanthi V. Risk factors for gastric cancer in South India. Singapore Med J 2009; 50:147–51.
11. Mathew A, Gangadharan P, Varghese C, Nair MK. Diet and stomach cancer: A case-control study in South India. Eur J Cancer Prev 2000;9:89–97.
12. Rao DN, Ganesh B, Dinshaw KA, Mohandas KM. A case-control study of stomach cancer in Mumbai, India. Int J Cancer 2002; 99:727–31.
13. Wang XQ, Terry PD, Yan H. Review of salt consumption and stomach cancer risk: Epidemiological and biological evidence. World J Gastroenterol 2009; 15:2204–13.
14. Gajalakshmi CK, Shanta V. Lifestyle and risk of stomach cancer: A hospital-based case-control study. Int J Epidemiol 1996; 25:1146–53.
15. Soykan I, Yakut M, Keskin O, Bektaş M. Clinical profiles, endoscopic and laboratory features and associated factors in patients with autoimmune gastritis. Digestion 2012; 86(1):20-6.
16. Holcombe C, Babayo U. The pattern of malignant disease in North and East Nigeria. Trop Geogr Med 1991; 43:189-92.
17. Oluwasola AO, Ogunbiyi JO. Gastric cancer: aetiological, clinicopathological and management patterns in Nigeria. Niger J Med 2003; 12:177-86.
18. Kitinya JN, Lauren PA, Jones ME, Paljarvi L. Epidemiology of intestinal and diffuse types of gastric carcinoma in the Mount Kilimanjaro area, Tanzania. Afr J Med MedSci 1988; 17:89-95.
19. Ogutu EO, Lule GN, Okoth F, Musewe AO. Gastric carcinoma in the Kenyan African population. East Afr Med J 1991; 68:334-9.
20. Cassell P, Robinson JO. Cancer of the stomach: a review of 854 patients. Br J Surg 1976; 63:603-7.
21. Schindler R, Steiner PE, Smith WM, Dailey ME. The classification of gastric carcinoma. SurgGynaecolObst 1941; 73:30-9.

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