

Original article

Clinico-Pathological Variation of Carcinoma Stomach at Different Age Group

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ABSTRACT

CONTEXT: Carcinoma of the stomach in our country is not uncommon and shows a trend towards a relative young age at diagnosis and the majority of patients present late with advanced stage cancer. Lack of awareness of the disease, poor accessibility to health care facilities and lack of screening programs in this region may contribute to advanced disease at the time of diagnosis. **OBJECTIVES:** To evaluate clinic-pathological variation of carcinoma stomach at different age group. **METHODS:** A prospective type of observational study was done of 58 patients diagnosed with carcinoma of the stomach treated at Dhaka Medical College Hospital and others tertiary level referral hospitals from 15.12.2013 to 14.06.2014. Clinical evaluation made by detailed history regarding presenting illness, dietary pattern, personal habits. Meticulous systematic physical examination done in each case. Investigation like Endoscopy, Ultrasonography finding recorded. Operative finding like tumor size, serosal involvement, hepatic metastasis, lymph node involvement, peritoneal metastasis and ascites recorded. Data were analyzed and compared by statistical tests. **RESULTS:** A total of 58 cases were included in this study. 10 were from below 40 years (young group) and 48 were above 40 years (elderly group). Young patients had less definitive symptoms than elderly group. Pain (80% vs 71%) and vomiting (70 % vs 72%) were the most prominent symptoms in both younger and older groups. But in elderly a significant number 48 (73.8%) of cases had anorexia. Lump and visible peristalsis were present in both groups in approximately similar proportion. Histopathologically younger patients had more aggressive disease than the elderly group. The operability in carcinoma of the stomach was more in young group probably due to physical fitness of patient. In both the groups' lower part of stomach was the commonest site of malignancy. The incidence of malignancy in lower part of stomach was more in young patients. In young group tumor status was T4 in 60% and in elderly group 62.5% was in T4 stage. 50% vs 47% had lymph node involvement (N₂) in both younger and older groups. **CONCLUSION:** The incidence of carcinoma of the stomach in patients younger than 40 years was more common than Western world. Patients were presenting more with lesions in the distal stomach in our country than the Western world. Female predominance among young age group. Epigastric pain, vomiting and anemia were most common symptom in patients.

Key words: Carcinoma of the stomach, Age groups Tumor sites, Adenocarcinoma

INTRODUCTION

Carcinoma of the stomach is a major cause of cancer mortality worldwide.¹ The incidence of carcinoma stomach exhibits significant geographic variability. Higher incidence has been reported from Japan, China and South

Korea and a lower incidence have been reported from India, Pakistan and Thailand.² Carcinoma of the stomach is rare under age 40 years, from which point the risk gradually increases with age.³ The mean age at diagnosis is 63 years.⁴ However, less than 5% of gastric cancer cases occur in people under 40 years of age.⁵ It occurs in the younger individuals with a much higher rate of mortality and morbidity.⁶ Approximately 10% of young gastric cancer patients have a positive family history. Among the risk factors there is a strong link between H. Pylori infection & distal carcinoma stomach. Diet rich in salted & smoked fish & meat, consumption of high dietary nitrate increase cancer risk. Carcinoma is associated with

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cigarette smoking and dust ingestion from a variety of industrial processes.¹ The clinic-pathological features of gastric carcinoma are said to differ between young and elderly patients and it has been claimed that young patients have a poorer prognosis.⁷ The initial symptoms are non-specific: epigastric pain or feeling of fullness, belching and loss of appetite, nausea, vomiting and weight loss presented later, accompanied by anemia and weakness. It is found that most young patients with gastric cancer revealed metastases at the time of diagnosis. There are principally two forms of gastric cancer in Lauren classification: intestinal gastric cancer and diffuse gastric cancer. In intestinal gastric cancer, forms polypoid tumors or ulcers that more common in elderly patients.⁸ Diffuse gastric cancer infiltrates deeply into the stomach without forming obvious mass lesions. This occurs more frequently in younger patients.⁹ Physical signs develop late in the course of the disease and are most commonly associated with locally advanced or metastatic disease.¹⁰ Patients with advanced tumors may present with a palpable abdominal mass, cachexia, bowel obstruction, ascites & hepatomegaly. Concerning the anatomic location of primary lesions, the incidence in the lower third of the stomach is higher in elderly patients than in young patients.¹¹ Histopathologically in young patient's malignancy were more aggressive than older group. The percentage of diffuse variety was more in young group and poorly differentiated were more in elderly group.¹² Although the etiological factors and pathogenesis of gastric carcinoma are not yet fully understood.¹³ Gastric cancer is difficult to diagnose in young people and is asymptomatic even in the advanced stages of the disease.¹⁴

Though the diagnosis of gastric neoplasm is often overlooked in young patients, symptoms observed in this age group did not differ from those in adult.⁹ The most important pathological determinant to evaluate clinical

and prognostic significance is the depth of penetration of stomach wall by the lesion.¹⁵ Young patients were more likely than older patients to have advanced nodal and distant metastatic disease at presentation.

Several reports have suggested that younger patients are frequently diagnosed with advanced tumor stages and that Gastric cancer has a poorer prognosis in young in comparison to older patients.¹⁶⁻¹⁹ The importance of the studies that provide insight into the clinical and pathological characteristics of patients with gastric cancer to design a strategy that will lead to early detection. Therefore this study analyzed the clinico-pathological variation of carcinoma stomach at different age group.

MATERIALS & METHODS

This is a prospective type of observational study of 58 cases of gastric cancer admitted during the period of 15.12.2013 to 14.06.2014. This study was carried out in different surgical units of Dhaka Medical College Hospital and others tertiary level referral hospitals. This study population comprised diagnosed patients of carcinoma of stomach respective of age & sex attending different surgical units of Dhaka Medical College Hospital and others tertiary level referral hospitals. As this study, case notes taken from the history sheet as per protocol were the main source of data. Detailed history of the study population was recorded with special attention to their age, occupation, socio-educational status, menstrual status, drug consumption status and the presenting complaints. Relevant important physical findings and investigations were performed in all cases and recorded. Operative finding like tumor size, serosal involvement, hepatic metastasis, lymph node involvement including group, size and number, peritoneal metastasis and ascites, histopathological finding was recorded in detail. Inclusion criteria were

patient of either sex who admitted with presentations suggestive of carcinoma of the stomach and histopathologically confirmed from tissue obtained by endoscopy and patients with carcinoma stomach who undergone operative treatment. Exclusion criteria were patient already received neo-adjuvant therapy. Patient who had concurrent any other malignancy. Patient who are unfit for any operative procedure. Patient who do not want to include in this study. Prior to commencement of this study, the Aim, objectives, risk benefits of the study was described to the patients in easily understandable local language and written consent from every patient was also taken. It was assured that all information & records will be kept confidential.

RESULTS

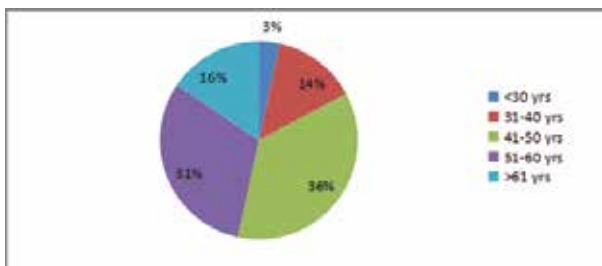


Fig 1 : Age distribution of the patients.

A total of 58 patients were included in the study.

Table I: Group distribution of the patients .

Group	Patient	Percentage
A (< 40 yrs)	10	17.24
B (≥40 yrs)	48	82.75
Total	58	100

Only 10 (17.24 %) cases were below 40 years (Group A) and 48 (82.75 %) cases were 40 years or above (Group B).

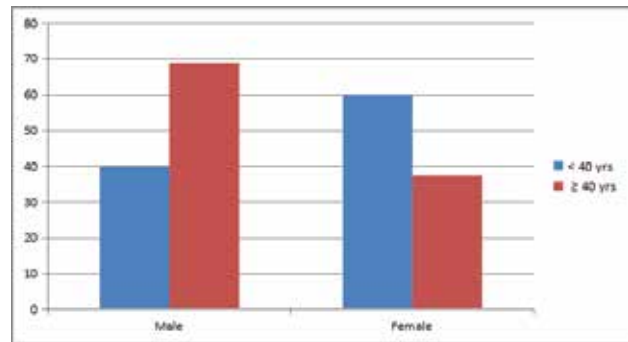


Fig 2 : Sex distribution of the patients.

Thirty seven patients were male while the rest were female. The proportion of females in the young group (60%) was significantly greater than the proportion (37.5%) in the older group.

Table II: Comparison of Clinical Presentation of two groups of patients of gastric cancer.

Symptom	Group A (n=10) No (%)	Group B (n=48) No (%)
Dyspepsia	03(30)	26(54.16)
Vomiting	07(70)	35(72.91)
Abdominal pain	08(80)	34(70.83)
Anorexia	05(50)	35(72.91)
Weakness/Weight loss	05(50)	30(62.50)
Abdominal lump	02(20)	14(29.16)
Hematemesis/Melaena	01(10)	03(6.25)

In Group A, 08 (80 %) patients and in Group B, 34 (70.83 %) patients had pain in abdomen. Vomiting was present in 70% and 72.9% cases of group A and B respectively.

Table III : Personal history of gastric malignancies

	Group A (n=10) No (%)	Group B (n=48) No (%)
Family history	1(10)	0(00)
Smoker	5(50)	28(58.33)
Alcoholic	1(10)	3(6.25)

Only one patients had family history of cancer stomach. Thirty three of the patients were smokers, either at the time or in the recent past. In group A 05 (50%) and in group B 28 (58.33%) cases were smoker. Four patients were alcoholic and rest were non-alcoholic.

Table IV : Dietary habit of the patients

Type of food	Group A (n=10)	Group B (n=48)
	No (%)	No (%)
Spicy	5(50)	18(37.5)
Salty/Preserved	1(10)	3(06.25)

Twenty three patients mentioned of taking predominantly typical spicy Bangladeshi food while four patients mentioned of salty diet. Majority of the study population was habituated to typical Bangladeshi spicy food. 05 (50 %) patients of group A and 18 (37 %) patients of group B consumed spicy food.

Table V : Relevant general examination findings of the patients

Parameter	Group A (n=10)	Group B (n=48)
	No (%)	No (%)
Anemia	06(60)	41(85.41)
Jaundice	01(10)	02(4.16)
Dehydration	04(40)	7(14.58)
Supraclavicular LN	0(00)	02(4.16)

Table V shows in group A 06 (60%) & in group B 41 (85.4%) cases were anaemic respectively.

Table VI: Abdominal examination findings of the patients

Parameter	Group A (n=10)	Group B (n=48)
	No (%)	No (%)
Palpable Lump	02(20)	26(54.16)
Visible Peristalsis	02(20)	12(25)
Hepatomegaly	00	02(4.16)
Ascites	01(10)	07(14.58)

Abdominal lump was present in 02 (20 %) of group A patients and 26 (54 %) group B patients and visible peristalsis 2 (20 %) and 12 (25%) cases respectively.

Table VII: Site of lesions on upper gastrointestinal endoscopy

Tumor site	Group A (n=10)	Group B (n=48)
	No (%)	No (%)
Proximal	02(20)	5(10.41)
Middle	01(10)	07(14.58)
Distal	07(70)	35(72.91)
Supicious Linitus Plastica	0	01(2.08)

The growth was present in the distal part of stomach in 70% of cases in group A and 72.9% in group B. 10 % patients of Group A and 14 % patients of Group B had growth in middle part of the stomach. Growth in proximal part 20% was found in group A patients and 10.4% in group B patients.

Table VIII : Abdominal ultrasonographic findings of the patient

Parameter	Group A (n=10)	Group B (n=48)
	No (%)	No (%)
Lymphadenopathy	4(40)	11(22.91)
Ascitis	1(10)	7(14.58)
Hepatic metastasis	0	2(4.16)

Ascitis was present in 10 % of cases in group A and 15 % in group B.

Table IX: Type of surgery in patient with Ca Stomach

Procedure	Group A (n=10)	Group B (n=48)
	No (%)	No (%)
Total gastrectomy	02(20)	04(8.33)
Distal partial gastrectomy	07(70)	17(35.41)
Palliative	02(20)	26(54.16)
Inoperable (Biopsy only)	00	01(2.08)

After preoperative evaluation, 48 patients were operated upon. 70% group A patients were treated by distal partial gastrectomy. Whereas group B patients were treated by distal partial gastrectomy in 35.58% and palliative gastrojejunostomy in 54% cases in the older group.

Table X : Laparotomy findings of the patient

Parameter	Group A	Group B
	(n=10) No (%)	(n=48) No (%)
Ascitis	1(10)	10(20.83)
Peritoneal seedling	1(10)	8(16.66)
Location of tumor		
Upper	02(20)	5(10.41)
Middle	01(10)	07 (14.58)
Lower	07(70)	35(72.91)
Liver surface	2(20)	8(16.66)

Peritoneal involvement was present in 01(10 %) and 08(16.6%) cases of Group A and Group B respectively. Hepatic involvement was found in 02(20%) and 08(16.6%) of cases of Group A and Group B respectively.

Table XI: Grading of the resected specimen

Grade	Group A	Group B
	(n=10) No (%)	(n=48) No (%)
Well differentiated	3(30)	4(8.33)
Moderately differentiated	2(20)	13(32.5)
Poorly differentiated	5(50)	31(64.58)

All the tumors were adenocarcinoma according to histopathology of the resected specimens. Poorly differentiated carcinoma stomach was found in 50% of group A and 64.58% of group B patients.

Table XII: Tumor Status in TNM classification in two groups of patients with carcinoma of the stomach

Tumor status	Group A	Group B
	(n=10) No (%)	(n=48) No (%)
T1	00	00
T2	00	06(12.5)
T3	04(40)	12(25)
T4	06(60)	30(62.5)

T3 stage was present in 04 of 10 in group A (40%) and 12 of 48 (25%) of cases present in elderly (group B) patients. T4 status was present in 06 of group A (60%) and 28 (58%) of 48 cases of group B.

Table XIII: Showing difference in Nodal Involvement (as per TNM classification) in two groups of gastric cancer patients

Lymph node status	Group A	Group B
	(n=10) No (%)	(n=48) No (%)
N ₀	02(20)	05(10.41)
N ₁	03(30)	19(39.58)
N ₂	05(50)	23(47.91)
N _x	00	01(2.08)

N₂ stage was present 05 in group A (50%) and 23(47.91%) of cases present in elderly (group B) patients.

DISCUSSION

These demographic and clinicopathological features tended to be different between the patients aged 40 years or less and those aged over 40 years.⁵ Thus, we divided our population into 2 groups according to age with a cut-off of 40 years. A total of 58 histopathologically confirmed cases were included in the present study. Among them 10 cases were included in young group & 48 cases in elderly group. In the present study the incidence of gastric carcinoma in young group was 17.24 % (10 of 58 patients). In one Jong-

Han et al³ about 13.5 % patients were found below 40 years. Hye Won Chung et al²⁰ suggested about 15% of patients with gastric cancer are younger than 40 years of age. In another study Martín Gómez et al⁴ it was 8.8% in a series of 206 cases. In another study¹⁰ a statistically significant increase in number of patients below the age of forty years was seen in cancers involving oesophageo-gastric junction in Indian subcontinent. In terms of gender, there was a significantly higher percentage of females in the young group (60%) than the older group (37.5%). In one Marita C Bautista et al² noted a higher female predominance among younger subjects. Hye Won Chung et al²⁰ observed gastric cancer increased in the relative proportion of young age compared with older especially in young females. The reason for this higher number of female patients in the younger group is not yet known. Yue-Xiang Liang et al²¹, considerate that the majority of elderly patients with gastric cancer are male. Most patients in both groups were symptomatic. The distributions of the presenting symptoms in both age groups were almost similar. Though the diagnosis of gastric cancer was sometimes reserved in young patients, symptoms observed in this age group did not differ from those in older⁶ similar observations was also noted in this study. Epigastric pain was the most common presenting symptom in both groups followed by weight loss. In one study Kamal E, Bani-Hani¹³ revealed symptoms of gastric cancer in young are not different from those in the elderly, but owing to its relatively uncommon presentation in the young age group, the diagnosis may be delayed or less likely to be accurately made preoperatively. Epigastric pain was the most common presenting symptom in both groups (80% in the young group and 78.8% in the older group) followed by weight loss and/or anemia. Horacio López-Basave et al¹⁴ 70% indicated that pain was the main manifestation of a disorder. In study only one patients had family history of cancer

stomach in young age group. Approximately 10% of young patients with gastric cancer have a positive family history. Warner Enrique Alpizar¹² suggested gastric cancer is observed in approximately 10% of the cases. Bani-Hani¹³ revealed The high frequency of a positive family history in young patients suggests an opportunity to identify a high-risk population for screening. Tobacco smoking has a positive association while increasing consumption of vegetables and dietary products has a protective effect.¹ In study thirty three of the patients were smokers either at the time or in the recent past. About 05 (50%) group A and 28 (58.33%) group B cases were smoker. Smoking was the prominent risk factors in both the groups but spicy and Salty/Preserved intake was more in younger group.^{12,13,22} In study Twenty three patients mentioned of taking predominantly typical spicy Bangladeshi food while four patients mentioned of salty diet. Majority of the study population was habituated to typical Bangladeshi spicy food. 05 (50 %) younger patients and 18 (37 %) older patients consumed spicy food. Warner Enrique Alpizar¹² revealed Diets high in salt and preserved meats have been suggested to play a role in the etiology of gastric cancer. Abdominal lump was present in 02 (20 %) of young patients and 26 (54 %) of older patients, and visible peristalsis was present 2 (20 %) and 12 (25%) cases in young & older group respectively. Deodhar SD⁹ reveals, intra-abdominal mass was the commonest findings. Other studies showed similar observations in different countries.^{5,8,15} Ascites was present in 10% and 40.5 % cases in younger & older age group and hepatomegaly present in 04.16 % cases only. Similar observation was reported from neighboring countries.⁷ Endoscopy is investigation of choice for diagnosis of gastric carcinoma. Numerous reports had demonstrated that its accuracy of diagnosis was greater than 95%.^{17,23} Spiral CT scan has limited ability to identify lymph node

metastases but can detect adjacent organ invasion. Whenever possible these modalities may be used for preoperative assessment.²³ Endoscopic ultrasound has been found 80% and 68.8% accurate respectively for Tumor and Nodal status.²⁴⁻²⁶ Pre operative assessment of nodal status therefore remains difficult and has low specificity but a combined approach might give better understanding and outcome. The proportion of the histologically differentiated type cancer increased with aging from 50% in the younger patients to 64% in the elderly. Some studies concluded that gastric carcinoma in elderly patients may principally develop as well-differentiated lesions that progress to poorly differentiated ones, whereas in younger patients, most gastric carcinoma emerges as poorly differentiated type at an early phase.^{21,25} Histopathologically in young patient's malignancy were more aggressive than older group. The percentage of diffuse variety was more in young group and poorly differentiated were more in elderly group.^{18,26} TNM staging was done in all the operated cases. In both the groups malignancy was in advanced state. T3 stage was present in 04 of 10 in group A (40%) and 12 of 48 (25%) of cases present in elderly (group B) patients. T4 status was present in 06 of group A (60%) and 28 (58%) of 48 cases of group B. T3 stage tumor was more in young group whereas, T4 was more common in the elderly group and was statistically significant.^{17,26,27} The location of gastric cancer has changed from distal to more proximal over recent decades. While the incidence of distal gastric cancer has been decreasing in the western countries, the incidence of proximal gastric cancer has been rapidly rising.²⁸ In study, the frequency of upper gastric cancer was found to be 20% and 10% in younger and in older group respectively. The growth was present in the distal part of stomach in 70% of cases in young patient and 73% in older patient. Dong-Yi Kim et al²⁵ suggested the lower third of the stomach was the most common site of

gastric carcinoma in both groups and the upper third was more frequently involved in the young patients than in the elderly patients (16.8%vs 8.3%). Marita C Bautista et al² suggested lower third cancer (56.0%) was the most common among all gastric cancers.

In this study, incidence of growths presenting with T3 was 40% vs 25% and T4 was 60% vs 60.25 % in younger & older group. These data are similar to those reported in another Asian series.^{18,29} In Western countries and Japan, patients with early gastric carcinoma are detected more than our country due to routine upper GI endoscopy screening program which is lacking in our country. In study lymph node stage N₂ was present 05 in group A (50%) and 23(47.9%) of cases present in elderly (group B) patients. Lymph node involvement was greater in elderly group than young group of patients.²⁵ Peritoneal involvements were present 10 % and 16.6% cases of young and elder group respectively. Hepatic involvement was also found 20%) and 16.6% in both group respectively. The elderly and young patients had similar distributions with respect to depth of invasion, nodal involvement, hepatic metastasis, peritoneal dissemination.^{14,25,30} A delay in diagnosis existed in both groups and exerted influence on patient management and prognosis.

LIMITATIONS

This study has some obvious drawbacks like short period of study and small sample size. One large volume study will be required to draw an appropriate and accurate conclusion. "Older >40 years for old and up to 40 years for younger might seem inappropriate but we followed it because most of the study on Gastric cancer dealing with this kind of comparison employ the cut-off line of 40 years old and there is no thumb rule to decide the cut-off point for the age. The number of young

patients of Gastric cancer is very low as compared to older patients and because of small number of young patients there is chance of biasness present. This is not overall picture of Bangladesh. All patients in this group are not able to carry on all investigations needed such as CT scan of abdomen.

CONCLUSION

The incidence of gastric carcinoma in patients younger than 40 years was more common than Western world. Patients are presenting more with lesions in the distal stomach in our country than the Western world. The only distinct demographic aspect in young gastric cancer patients is the higher proportion of females. Some significant differences were found among clinicopathological features, histological grade and cell differentiation of Gastric cancer of young and older patients. The incidence of gastric cancer in men were higher than those in women in all age groups, we found female predominance among young age group. Epigastric pain, vomiting and anemia were most common symptom in patients. Both young and old patients with Gastric cancer usually present at an advanced stage of the disease and have poor prognosis.

RECOMMENDATION

More awareness of gastric cancer onset is required to detect cancer at early stage to treat it successfully. Patient education, health promotion, open access endoscopy and improvement of the diagnostic techniques may be the best way of improving the prognosis of Gastric cancer.

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