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Outcome of Surgical Management of Carcinoma of Stomach: A Retrospective Study

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Abstract

In the absence of any statistical data, it is not possible to comment on the prevalence of carcinoma of stomach in Bangladesh but from clinical experience it seems to be increasing now a day. It may be due to better diagnostic facilities available and increased medical consciousness. In this retrospective study 50 cases (randomly selected) of carcinoma of stomach patients were admitted in surgical units of BSMMU and DMCH during the period from March 05 to February 2007. They were admitted from outpatient department for surgical treatment. So these cases were selective in nature. Out of the 50 cases, 39 cases were from BSMMU and 11 cases were from DMCH. All the patients who were included in this study were ultimately proved as carcinoma of stomach. Out of 50 cases of carcinoma of stomach in this series 9 cases (18%) were found in age group of below 40 years, 25 cases (50%) was found between 40-60 years and 16 cases (32%) beyond 60 years. Incidence of gastric carcinoma predominates in male. In this series of 50 cases shows male to female ratio 1.78:1. Incidence of gastric carcinoma predominates in male. In this series of 50 cases shows male to female ratio 1.78:1. Dietary factors probably have a role in the pathogenesis of gastric carcinoma. A number of authors recommended that highest incidence of gastric carcinoma in Japan is due to the habit of eating rice that rice eaters have to overload the stomach in order to get sufficient calories. In this study of 50 cases the physical finding of carcinoma of stomach were more or less established. Ultrasonography of whole abdomen was done preoperatively in all patients. Clinical staging was done applying TNM classification of stomach neoplasm. In this series wound dehiscence occurred in 1 case and died on 12th post-operative day. Pulmonary complication occurred in 2 cases and 1 patient died and another patient recovered. In this series 2 patients (4%) died in hospital, one due to wound dehiscence and another due to pulmonary infection. Among those 2 patients palliative surgery was done in 1 patient and curative surgery was done in 1 patient. Out of 48 patients only 19 patients replied and the remaining 29 patients did not respond. Among the patients who have undergone laparotomy but were inoperable and biopsy were taken only (total no. of patient 4) all died within 3 months of surgery. Gastric cancer is one of the most common causes of cancer death in the world. The exact incidence of carcinoma of stomach is not known in Bangladesh but it seems that the incidence is not low. The most important factor is almost all the cases in Bangladesh present at an advanced stage of the disease when curative resection cannot be done and ultimately the result of surgical treatment become unsatisfactory. But if these patients could be diagnosed and admitted for treatment at early stage of their disease, the outcome of surgical treatment would be far better.

Keywords: Outcome, Surgical Management, Carcinoma of Stomach

Introduction

Carcinoma of stomach has been described as one of the captains of the men of death. 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. Gastric cancer is actually an eminently curable disease provided it is detected at an early stage and treated adequately^[1]. It rarely disseminates widely before it has involved the lymph nodes and, therefore, there is an opportunity to cure the disease prior to dissemination. Early diagnosis is therefore the key to success with this disease. Unfortunately, the late presentation of most cases is the cause of poor overall survival figures. The only treatment modality able to cure the disease is resectional surgery. There are marked variation in the incidence of gastric cancer worldwide. In UK it is approximately 15 per 1, 00, 000 per year, in USA 10 per 1, 00, 000 per year, and Japan 70 per 1, 00, 000 per year.

In our country there is no definite statistics. Currently incidence of gastric cancer is continuing to fall at about 1% per year^[2, 3]. These reductions exclusively affect carcinoma arising in the body and distal stomach. By contrast there appears to be an increase in the incidence of carcinoma in the proximal stomach particularly oesophagogastric junction. Carcinoma of the distal part and body of the stomach is most common in low socioeconomic group, whereas that in the proximal stomach is more common in higher socioeconomic group. Unfortunately, this is a very difficult disease to diagnose early because of diversity of its presentation and the time lag between the commencement of the growth and the appearance of symptoms. Clinical features of the disease are not typical in all the cases. Early curable gastric cancer has no specific features to distinguish it symptomatically from benign dyspepsia. Advanced cancer may present with persistent pain unresponsive to treatment, abdominal lump, obstructive jaundice etc. Sometimes, the patient presents with extra alimentary symptoms and signs like Troisier's sign, Krukenberg's tumour, etc. In our country most of the cases appear at late stage. Multiple factors including poverty, lack of adequate medical facility, ignorance, illiteracy are responsible for late diagnosis and poor outcome. The purpose of this retrospective study was to evaluate the different modes of treatment, either curative or palliative, according to the stage of the disease and subsequently to observe the outcome of the treatment, morbidity and mortality.

Materials and Methods

In this retrospective study 50 cases (Randomly selected) of carcinoma of stomach patients were admitted in surgical units of BSMMU and DMCH during the period from March 05 to February 2007. They were admitted from outpatient department for surgical treatment. So these cases were selective in nature. Out of the 50 cases, 39 cases were from BSMMU and 11 cases were from DMCH. All the patients who were included in this study were ultimately proved as carcinoma of stomach. The criteria to diagnose a case of carcinoma of stomach were detailed history of the patient, physical examination, routine laboratory investigations, radiological findings and endoscopic examination with multiple biopsy report. Those patients who were strongly clinically suspected carcinoma stomach, but failed to be diagnosed endoscopically (Biopsy) needed diagnostic laparotomy and histological proof obtained from operative specimen or biopsy sample. Patients of leiomyosarcoma and lymphoma of stomach were excluded. Patients of squamous cell carcinoma of lower oesophagus involving oesophagogastric junction were also excluded.

After taking preoperative preparation, all the patients underwent laparotomy and after exploration of the abdomen, the extent of the growth was assessed and any local or distant metastasis, if presented, were identified. A plan for resection of the tumour, either curative or palliative, was based on the extent of the tumour and surgical procedure was done accordingly. Multiple biopsy were taken from tumour mass and the involved lymph nodes were taken for histological examination to detect metastasis in all cases. Post-operative follow up was maintained and postoperative complication when occurred were tried to manage properly. Patients were discharged from the hospital

with proper advice. The analysis of these 50 cases of carcinoma of stomach has formed the basis of this prospective study. All of the patients were tried to follow up later at their home by phone or mailing to know the patient condition and outcome of treatment. Some of them responded but some did not respond. The results were analyzed based on the aims and objectives of the study and were shown in tabulated form; compared and analyzed with that of standard studies published abroad.

Results

Table 1: Baseline and demographic characteristics of the study patients (N=50)

| Age of the patient | Number of patient | Percentage |
|------------------------|-------------------|------------|
| Below 40 years | 9 | 18% |
| Between 40 to 60 years | 25 | 50% |
| Beyond 60 year | 16 | 32% |
| Sex | | |
| Male | 32 | 64% |
| Female | 18 | 36% |
| Occupation | | |
| Cultivation | 28 | 56% |
| Service holder | 4 | 8% |
| Housewife | 18 | 36% |
| Blood group | | |
| Group- A | 23 | 46% |
| Group-B | 15 | 30% |
| Group- AB | 6 | 12% |
| Group- 0 | 6 | 12% |
| Habit | | |
| Smoker | 28 | 56% |
| Non-smoker | 22 | 44% |

Out of 50 cases of carcinoma of stomach in this series 9 cases (18%) were found in age group of below 40 years, 25 cases (50%) was found between 40-60 years and 16 cases (32%) beyond 60 years. Incidence of gastric carcinoma predominates in male. In this series of 50 cases shows male to female ratio 1.78:1. Incidence of gastric carcinoma predominates in male. In this series of 50 cases shows male to female ratio 1.78:1. Dietary factors probably have a role in the pathogenesis of gastric carcinoma. A number of authors recommended that highest incidence of gastric carcinoma in Japan is due to the habit of eating rice that rice eaters have to overload the stomach in order to get sufficient calories. Repeated overloading may be one factor for gastric carcinoma. In the present series all the patients are rice eaters as it is the staple diet in Bangladesh. Aird found increased incidence of gastric carcinoma in people with blood group "A". In this series higher incidence is found with blood group "A". Next common group is "B". In this series incidence of gastric carcinoma is higher in smoker than non-smoker group. All the patients in this series admitted in the surgical units in BSMMU and DMCH for surgical treatment and most of the patients were established cases of carcinoma of stomach. The mode of presentation in different patient is shown in table-1. In this study of 50 cases the physical finding of carcinoma of stomach were more or less established. It has been shown in Table-2.

Table 2: Sign of the patients

| Signs | Total number of patients | Number of patients | Percentage |
|--|--------------------------|--------------------|------------|
| Tenderness in epigastrium | 50 | 18 | 36% |
| Palpable abdominal mass | 50 | 8 | 16% |
| Hepatomegally | 50 | 7 | 14% |
| Virchow's gland | 50 | 3 | 6% |
| Ascites | 50 | 6 | 12% |
| Jaundice | 50 | Nil | 0% |
| Anaemia | 50 | 32 | 64% |
| Visible peristalsis | 50 | 4 | 8% |
| Succussion splash | 50 | 4 | 8% |
| Cachexia | 50 | 11 | 22% |
| On digital rectal examination (Blumer shelf found) | 50 | 1 | 2% |

Table 3: Reasons for delayed diagnosis

| Reasons | Number of patients | Number of patients |
|---|--------------------|--------------------|
| Delay to visit first physician | 35 | 70% |
| Misdiagnosis due to non-specific symptom | 8 | 16% |
| Limitation of hospital bed | 32 | 64% |
| Investigation not suggestive of carcinoma stomach | 6 | 12% |

Carcinoma of stomach is a curable disease if diagnosed at an early stage and treated adequately. But unfortunately most of the patients in our country, due to poverty and other limitations, go

to hospital at late stage. And in the hospital most of the patients have to wait for months to get admission due to limitation of bed. Reasons for delayed hospitalization are shown in table-3.

Table 4: Preoperative routine investigation (n-50)

| | Number of patients | Number of patients |
|--|--------------------|--------------------|
| Hb <60% | 21 | 42% |
| ESR >30mm in 1st hour | 38 | 76% |
| Leucocytosis | 12 | 24% |
| Positive occult blood test | 26 | 52% |
| Raised blood sugar level | 9 | 18% |
| Abnormality in each | 5 | 10% |
| Serum bilirubin- below 17 μ mol/l | 50 | 100% |
| S. alkaline phosphate below 115 unit/L | 47 | 94% |
| S. SGPT- below 40u/L | 42 | 84% |

Result of routine investigation, done is hospital preoperatively and shown in the following table-4.

Table 5: Ultrasonogram findings.

| USG finding | Total number of patient | Number of patients | Percentage |
|------------------|-------------------------|--------------------|------------|
| Gastric mass | 50 | 8 | 16% |
| Aascitis | 50 | 6 | 12% |
| Liver metastases | 50 | 7 | 14% |

Ultrasonography of whole abdomen was done preoperatively in all patients and the finding are shown in Table-5.

Table 6: Type of the growth found during endoscopy (n=50)

| Growth or abnormality | Total number of patient | Number of patients | Percentage |
|--|-------------------------|--------------------|-----------------------------------|
| Fungating growth | 20 | 40% | Malignant cell found |
| Polypoid growth | 11 | 22% | |
| Ulcerative growth | 8 | 16% | |
| Multiple erosion, superficial ulceration or normal appearances | 8 | 16% | Malignant cell could not be found |
| Endoscopy could not be done | 3 | 6% | |

Endoscopy of upper GIT and endoscopic biopsy was done in every patients preoperatively and the findings are shown in table-6.

Table 7: Location of the growth found during endoscopy (Total number of patients -39)

| Site of growth | Number of patients | Percentage |
|-------------------|--------------------|------------|
| Antrum | 34 | 68% |
| Body of stomach | 5 | 10% |
| Fundus and cardia | Nil | Nil |

Site of the growth seen during endoscopy is shown in Table-7. In this study 1 growth in the antrum and 7 growths in the body

were missed during endoscopy. Endoscopy could not be done in a case due to growth in cardia.

Table 8: The laparotomy findings and clinical staging

| Finding | Number of patients | Percentage |
|---|--------------------|------------|
| Growth found in stomach | 50 | 100% |
| Antrum | 35 | 70% |
| Body of stomach | 12 | 24% |
| Fundus and cardia | 3 | 6% |
| Fixed growth to posterior abdominal wall or adjacent origin | 36 | 72% |
| Mobile growth | 14 | 28% |
| Lymph node metastasis (Regional) | 43 | 86% |
| Metastases in liver or omentum | 26 | 52% |
| Peritoneal seedling | 4 | 8% |
| Ascites | 6 | 12% |

Table 9: Stage of the tumour (n-50)

| Stage | Number of patients | Percentage |
|-------|--------------------|------------|
| I | 0 | 0% |
| II | 7 | 14% |
| III | 24 | 48% |
| IV | 19 | 38% |

As soon as the abdomen was opened, a rapid search was made to ascertain the extent of the growth, presence or absence of metastases, clinical staging of the tumor by TNM classification and the feasibility of curative resection. Clinical staging was done applying TNM classification of stomach neoplasm. The laparotomy findings and clinical staging are shown in Table-8 and Table-9 respectively.

Table 10: Postoperative complication.

| Postoperative complications | Number of patients | Percentage | Outcome |
|-----------------------------|--------------------|------------|------------------------------|
| Lung infection | 2 | 4% | 1 died (2%) 1 recovered (2%) |
| Wound dehiscence | 1 | 2% | 1 died (2%) |

In this series wound dehiscence occurred in 1 case and died on 12th post-operative day. Pulmonary complication occurred in 2

cases and 1 patient died and another patient recovered.

Table 11: Operative mortality.

| Type of surgery done | Number of patients | Number of death | Percentage |
|----------------------|--------------------|-----------------|------------|
| Palliative surgery | 39 | 1 | 2.5% |
| Curative surgery | 7 | 1 | 14.18% |

Death during hospital stay of patients were taken as operative mortality. In this series 2 patients (4%) died in hospital, one due to wound dehiscence and another due to pulmonary infection.

Among those 2 patients palliative surgery was done in 1 patient and curative surgery was done in 1 patient. This is shown in Table-11.

Table 12: Outcome of treatment (n-19)

| Surgical procedure | Number of patients | Below 3 months | 3-6 months | 6-12 months |
|----------------------------------|--------------------|------------------|------------------|---------------|
| Curative resection | 4 | 1 patient 25% | 2 patients 50% | 1 patient 25% |
| Palliative surgery | 11 | 2 patients 18.2% | 8 patients 72.8% | |
| Laparotomy and biopsy taken only | 4 | 4 patients 100% | - | - |

Out of 50 patients either curative resection or palliative surgery was done in 46 patients and in case of 4 patients none of the procedures could be done and only biopsy was taken. During postoperative period 2 patients died and rest 48 patients were discharged with referral to oncology department for adjuvant therapy. We tried to follow up all the patients either by mail or by personal contact. Out of 48 patients only 19 patients replied and the remaining 29 patients did not respond. The mortality rate of the patients who came in follow up are shown below in Table-12. It has been observed that the patients who have undergone curative resection (Total no. of patient 7) and responded to follow up (4 patients out of 7 patients), 1 patient (25%) died within 3 months of operation, 2 patients (50%) died between 3-6 months and 1 patient (25%) died between 6-12 months of operation. Among the patients who have undergone palliative surgery (Total no. of patient 39) and responded to

follow up (11 patients out of 39 patients), 2 patients (18.2%) died within 3 months of operation, 8 patients (72.8%) died between 3-6 months and 1 patient (9.1%) died between 6-12 months after operation. Among the patients who had undergone laparotomy but were inoperable and biopsies were taken only (Total no. of patient 4), all died within 3 months of surgery.

Discussion

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%. There are marked variations in the incidence of gastric cancer worldwide. In the UK it is approximately 15 per 100000 per year and in the USA 10 per 100000 per year and in Japan 70 per 100000 per year. The exact incidence of this disease in our country is not accurately known but in a study, Professor A.N.M. Atai Rabbi *et al.* [1] noted that out of a total

2056 cases undergoing surgery, 77 cases were malignant diseases and among the malignant cases 35 cases were carcinoma of stomach (45.45%), denoting high incidence of this disease in our country. Upper gastrointestinal endoscopy was done in 1723 cases having upper abdominal symptoms in Dhaka Medical College Hospital, carcinoma stomach was seen in 91 patients (5.3%). Under the age of 30 years gastric carcinoma is rare. The majority of cases being found in persons over 40 years^[2-4]. In the survey of cancer in London published by British Empire Campaign Alexander HC, *et al.*^[5], there were 1405 cases of gastric carcinoma and of these 3 were in the age group of 15 to 25 years and 24 were in the age group of 25 to 35 years. Blendis, L. *et al.*^[6] found only 90 cases out of 10,890 of gastric carcinoma to be under the age of 30 years. Reported 1% gastric cancer occurred in patients under 35 years of age. In the present series 25 cases (50%) occurred between 40-60 years of age, 9 cases (18%) below 40 years and 16 cases (32%) beyond 60 years of age. Bockus, H.C, *et al.*^[7] reported that the incidence of carcinoma of stomach pre- dominates in male than female to the proportion of approximately 2 to 1. Christopher *et al.* observed no country in which the female gastric cancer rate was higher than that of male. Study on gastric cancer in young people has shown that younger patients are more likely to be female and distribution of sex ratio was roughly equal. In the present series 32 cases 64% were male and 18 cases 36% were female and male female ration in 1.78:1. Burell, M. *et al.*^[8] suggested that epidemiological distribution of gastric cancer throughout the world is influenced by dietary factors. In general gastric cancer appears to be positively correlated with ingestion of starch, pickled vegetables, salted fish and meat, and negatively correlated with whole milk, fresh vegetables, vitamin C and refrigeration Bockus *et al.*^[7] claims that gastric carcinoma in rice eater is due to over loading of the stomach in order to get sufficient calories as much as 100 gms of rice per meal). The principle food of our people is rice. In present series all patients are rice eaters. There is association of cancer of the upper alimentary track with tobacco smoking. Copenhagen, W.M.,^[9] showed the association between tobacco smoking and cancer. In the present series 28 cases (50%) of stomach cancer were smokers. Aird found a higher incidence of gastric carcinoma in people with blood group "A". In this series highest incidence of gastric carcinoma was found in blood group "A" 23 cases (46%) and the next blood group was "B", 15 cases (30%). Epigastric pain is the first symptom in approximately 55% of cases reported. 65% by Gray and Ward. In this series 18 patients resented with epigastric pain. Epigastric discomfort develops in 90% of cases and vomiting in approximately in 70% of cases of carcinoma of the stomach (A concise guide to clinical practice, 3rd edition). In this series vomiting presented in 29 cases (58%). Bockus *et al.*^[7] reported that in many patients with gastric cancer the first symptom is diminution of appetite followed by loss of body weight. From 1972 to 1985, a total 302 cases of gastric cancer were reported by the department of surgical pathology, Yale University School of Medicine Westhaven, Conn, 17 cases were early gastric carcinoma (EGC) and the remaining were advanced carcinoma (ADV). The presenting symptoms were: Dyspepsia- 100% (EGC), 81% (ADV); Early satiety 18% (EGC), 58% (ADV); GI blood loss 24% (EGC), 15% (ADV); Pain- 18% (EGC), 31% (ADV); Weight loss- 30% (EGC), 62% (ADV); Mass- 0% (EGC), 20% (ADV)^[10]. In this series 8 cases (16%) presented with epigastric lump, loss of weight in 36 cases (72%), dysphagia in 3 cases (6%), haematemesis in 5 cases (10%) and malaena in 4 cases (8%). Carcinoma of stomach outside Japan is usually at an advanced

stage by the time of diagnosis^[11]. In Japan, mass screening programme for gastric cancer enables them to reduce the morbidity and mortality comparative to the European countries. But poor countries like Bangladesh, it is very difficult to diagnose gastric cancer at an early stage by implementing mass screening programme. In our country most of patients come to the hospital in an advanced stage, when there is very little to do for them. If these patients could come to the hospital at an earlier stage of their disease, curative treatment could be provided to them. In this study, it was tried to find out the reasons behind the delayed diagnosis or delayed admission in the hospitals and the main causes found were delay to visit the first physician, limitation of bed in hospital, lack of availability of diagnostic endoscopy and biopsy in peripheral hospitals and miss diagnosis due to nonspecific symptoms. Result of investigation is an important factor for diagnosis of the disease at an earlier stage. Although a skilled radiologist attains a high degree of accuracy in the interpretation of a double contrast barium meal, small lesions are liable to escape notice (Bailey & Loves 22nd ed.). Chance of failure to diagnose will be more if too much barium is given or the radiologist is not much expert. More flat growth or diffuse infiltrative growth may remain undetected in the early stages. In the present series among 50 patients, curative surgery was done in 7 cases (Total gastrectomy in 3 cases and subtotal gastrectomy in 4 cases). Palliative surgery were done in 39 cases (partial gastrectomy and gastrojejunostomy in 28 cases and gastrojejunostomy only in 11 cases). Four (4) cases was found inoperable and only biopsy was taken. In this series histopathologically 100% tumours were adenocarcinoma. Das, K. *et al.*^[12] found that prognosis in gastric cancer is closely related of the clinicopathological classification based on presence or absence of metastasis than any histological features. 'Japanese gastric cancer Society' 1973 stated that the most important prognostic feature is depth of invasion of stomach wall by the tumour than histological type. In this series, histopathologically regional lymph node involvement were found in 43 cases (86%). Post-operative pulmonary complications are the most important cause of morbidity after operation. Dupont, J.B *et al.*^[13] in a review of literature estimated this incidence was 2.5-3% for all operations; 10-12% for abdominal operations. In the present series pulmonary infection occurred in 2 cases and 1 patient died. Another patient died due to wound dehiscence. Das, K. *et al.*^[12] recorded operative mortality of approximately 10% of all procedures requiring laparotomy for gastric cancer. Although it is 10% in patients undergoing resection for cure. It is least when a simple partial gastrectomy is performed and is about 3.9%. When extensive curative surgical procedure was applied, mortality rate was 14%. But the mortality rate is still higher among the patient undergoing palliative procedures (11.2%). Risk of mortality increases with increasing age dramatically. In the present series operative mortality is 4%. 2 patients died in postoperative period- one for pulmonary complication and another for wound dehiscence. Five (5) years survival in relation to operative procedure, total gastrectomy shows 10-30%^[14]. The most important prognostic feature is the depth of invasion of the stomach wall by the tumours. The relative 5 years survival rate in Japan for mucosal cancer is 100%, for cancer within the submucosa is 80-87%, for cancer involving serosa 35-40%^[15,16]. In the present series, out of 50 cases, 4 patients was found inoperable and biopsy was taken only. Among the rest 46 patients, 7 patients had undergone curative resection and 39 patients had undergone palliative surgical procedure. 2 patients had died in the post-operative period, one due to pulmonary

complication and another due to wound dehiscence. The rest 48 patients were discharged with advice to come in follow up or contact by mail or phone. In the present series postoperative follow up was short, about 3 months to 1 year. 19 patients out of 48 came in follow up. Among them 7 patients died within 3 months of operation, 10 patients died between 3-6 month and 2 patients died between 6 months to 1 year after operation.

Conclusion

Gastric cancer is one of the most common causes of cancer death in the world. The exact incidence of carcinoma of stomach is not known in Bangladesh but it seems that the incidence is not low. The most important factor is almost all the cases in Bangladesh present at an advanced stage of the disease when curative resection cannot be done and ultimately the result of surgical treatment become unsatisfactory. Lack of availability of diagnostic endoscopy and biopsy in peripheral hospitals as well limitation of bed in hospital and misdiagnosis due to nonspecific symptoms are the main causes of advanced stage of the disease in our country. It is fact that mass screening program like Japan may not be applicable in poor country like Bangladesh, but if diagnostic facilities like endoscopy of upper GIT with biopsy and Barium meal X-ray can be established in peripheral hospitals, then a large number of patients of carcinoma of stomach could be diagnosed at early stage of the disease. And if it can be done, the outcome of surgical treatment of the patient of carcinoma of stomach would be far better than the present status and the overall survival rate would be increased.

Conflict of Interest

Not available

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Not available

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