

Original Research Article

An appraisal of result of surgery for gastric carcinoma

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ABSTRACT

Background: Large number of the patients with gastric carcinoma (GC) remain asymptomatic, symptoms developed only in GC with advanced lesions with local or distant metastases. GC contributes significant morbidity and mortality related to malignancy, worldwide. The objectives of this study were to study the clinical presentation, surgery type and post-operative mortality and survival in case of patients with gastric carcinoma.

Methods: The study included the patients with histologically proven cases of adenocarcinoma of stomach over a period of 5 years. The study excluded the patients with proven distant metastatic disease and/or in whom only palliative surgery was performed. All the patients were followed-up regularly till 5 years after the surgery.

Results: The age-group of 51-60 years had maximum number of patients with GC followed by the age-group of 41-50 years. A majority of patients were presented with epigastric pain, weight loss, and anorexia. 30 (14.22%) patients had stage I GC while 77 (36.49%) and 104 (49.29%) patients had stage II and III GC, respectively. Overall survival of the patients was 75.62%, 56.22% and 44.78% at the end of 1-year, 2-years and 5-years.

Conclusions: Delayed diagnosis of gastric carcinoma responsible for this poor survival rates. The screening programs must be implemented for early diagnosis which can improve survival as well as quality of life of the patients with gastric carcinoma.

Keywords: Gastric carcinoma, Mortality, Survival rates

INTRODUCTION

Gastric carcinoma (GC) contributes significant morbidity and mortality related to malignancy, worldwide. It is the fourth most common malignancy and second cause of death among all malignancies in the world.^{1,2}

In India, GC is the fifth most common carcinoma among males and seventh most common carcinoma among females.³ As such, India have lower incidence of GC in India as compared to developed countries, southern and northeastern part and states of country have the higher incidence comparable to high-incidence areas of world.⁴ In gastrointestinal tract, stomach is the most commonly

involved site (60%-75%) with carcinoma followed by small bowel, ileocecal region and rectum.⁵ Among different types of GC, adenocarcinoma is the commonest, involving around 90% of cases of GC.⁶

Majority of the patients with GC remain asymptomatic, symptoms developed only in GC with advanced lesions with local or distant metastases.⁶ Patients with GC commonly present with epigastric pain, bloating, or a palpable epigastric mass.⁷ There are also symptoms related to gastric outlet obstruction -nausea and vomiting, linitis plastica-decrease appetite, cardia involvement-dysphagia and ulceration of the tumor-upper gastrointestinal bleeding.⁸ Patients with metastatic

disease, may have anorexia, weight loss, jaundice, ascites and liver enlargement.⁸

Surgical resection remains the mainstay of curative management of GC.⁹ Surgery play a more crucial role and have revolutionized treatment methodology for treatment of GC with new technical advances, like, endoscopic resection and minimally invasive access.¹⁰⁻¹² In early stages of GC, the management is complex with proven benefit with addition of both pre- and post-operative chemotherapy and post-operative. Depending on the size, location of the tumour and the ability to gain adequate tumour free margins, the commonest surgical procedure performed operations for GC are total and subtotal gastrectomy.⁹

In patients with advanced resectable GC, the 5-year survival rate may vary according to geographical locations and population, it ranges from 10% to 30%.¹³⁻¹⁵ The different predictive factors which govern the survival in patients with resectable GC are age, lymph node and liver metastasis, disease stage and tumour size are important factors for.^{16,17} With this background, the present study was carried out with the objectives to study the clinical presentation, surgery type and post-operative mortality and survival in case of patients with gastric carcinoma.

METHODS

This was prospective, non-randomized, single center, cohort study, conducted in the Department of Surgery, Sher-i-Kashmir Institute of Medical Sciences Soura, Srinagar, Jammu and Kashmir. The study was approved by Institutional Review Board. The written informed consent was obtained from patients before enrolling them into the study.

Inclusion criteria

The study included the patients with histologically proven cases of adenocarcinoma of stomach over a period of 5 years from January 1998 to December 2005 with additional 5-years follow-up last enrolled patient in the study.

The patients with histologically proven adenocarcinoma of stomach, diagnosis based on the union for international cancer control (UICC)-TNM classification of malignant tumors, underwent curative operative procedure.

Exclusion criteria

The study excluded the patients with proven distant metastatic disease and/or in whom only palliative surgery was performed. All the patients were followed-up regularly till 5 years after the surgery.

Death within 30 days of surgery has been taken as operative mortality. Surgical procedures performed

included subtotal gastrectomy with antecolic Billroth II type of gastro-jejunal anastomosis; total gastrectomy with oesophagojejunal loop anastomosis with jejuno-jejunosomv and upper partial gastrectomy with oesophago-gastric anastomosis depending on the size and location of the tumour, pre- and intra-operative findings, physical condition of the patient.

For the present study, the operative procedure with absence of macroscopically residual tumor after surgery and histologically clear margins after resection were considered as a curative operative procedure. Palliative procedures performed were anterior gastrojejunostomy or insertion of esophageal stent. Splenectomy was performed only when needed in tumour located in middle or upper third.

The data were recorded in structured case record form. The recorded data were analysed according to age and gender, mode of presentation, type of surgical procedure performed, stage of disease according to TNM classification and survival at 1, 2 and 5 years.

Statistical analysis

The collected data were subjected to statistical analysis using Microsoft Office Excel. Data was expressed as absolute numbers with or without percentages, as means with standard deviation or as medians with ranges. Frequency comparisons were performed by chi-square test. A probability value less than 0.05 was considered to denote statistical significance.

RESULTS

A total 211 patients were included in the present study, who had fulfilled the inclusion and exclusion criteria.

Table 1: Demographic characteristics of study population (n = 211).

Variables	No. of patients	Percentage
Gender		
Male	148	70.14
Female	63	29.86
Age (years)		
21-30	12	5.69
31-40	25	11.85
41-50	62	29.38
51-60	78	36.97
>60	34	16.11
Residence		
Urban	132	62.56
Rural	79	37.44

In the present study, more than two-third patients with gastric carcinoma (GC) with Male: female 2.35:1. The age-group of 51-60 years had maximum number of patients (78, 36.97%) with GC followed by the age-group

of 41-50 years (62, 29.38%) with mean age of patients was 51.67 ± 23.34 years. The urban population (132, 62.56%) was commonly affected as compared to rural population (79, 37.44%) (Table 1).

Table 2: Distribution of the patients according to symptoms (N=211).

Symptoms	No. of patients	Percentage
Epigastric pain	198	93.84
Weight loss	185	87.68
Anorexia	132	62.56
Vomiting	89	42.18
Dysphagia	54	25.59
Mass in epigastrium	34	16.11
Malena/hematemesis	22	10.43

According to symptomatology (Table 2), a majority of patients with GC were presented with epigastric pain (198, 93.84%) followed by weight loss (185, 87.68%) and anorexia (132, 62.56%). Very few patients had Malena or hematemesis (22, 10.43%).

Table 3: Distribution of the patients according staging of the gastric carcinoma (N=211).

Staging		No. of patients	Percentage
Pathological stage			
T1		21	9.95
T2		40	18.96
T3		72	34.12
T4		78	36.97
N stage			
N0		67	31.75
N1		52	24.64
N2		62	29.38
N3		30	14.22
TNM Stage			
Stage I	IA	8	3.79
	IB	22	10.43
	Total	30	14.22
Stage II	IIA	35	16.59
	IIB	42	19.91
	Total	77	36.49
Stage III	IIIA	45	21.33
	IIIB	43	20.38
	IIIC	16	7.58
	Total	104	49.29

All the diagnosed patients with GC, staging of the disease was done using UICC - TNM classification of malignant tumors. Maximum number (78, 36.97%) of patients had tumor stage T4 followed by T3 (72, 34.12%).

According to lymph nodes involvement, 67 (31.75%) patients belong to no. of stages. As per overall staging of the disease, 30 (14.22%) patients had stage I GC while 77

(36.49%) and 104 (49.29%) patients had stage II and III GC, respectively (Table 3).

Table 4: Distribution of the patients according type of surgery (N=211).

Surgery	No. of patients	%
Subtotal gastrectomy	124	58.77
Upper partial gastrectomy	65	30.81
Total gastrectomy	22	10.43

Depending on the different factors for deciding the type of surgery was done, 124 (58.77%) patients underwent subtotal gastrectomy, 65 (30.81%) patients underwent upper partial gastrectomy; while very few patients (22, 10.43%) underwent total gastrectomy (Table 4).

A 4.74% post-operative mortality was noted in the present study, as per the define criteria of post-operative mortality (Table 5).

Table 5: Post-operative mortality.

Variables	Post-operative mortality	
	No. of patients	%
Stage of disease		
Stage I (N = 30)	0	0.00
Stage II (N = 77)	2	2.60
Stage III (N = 104)	8	7.69
Type of surgery		
Subtotal gastrectomy (N=124)	5	4.03
Upper partial gastrectomy (N = 65)	4	6.15
Total gastrectomy (N=22)	1	4.55
Total (N = 211)	10	

On analysis of post-operative survival of patients with GC (table 6), overall survival of the patients was 75.62%, 56.22% and 44.78% at the end of 1-year, 2-years and 5-years.

Better survival rate was observed in patients underwent subtotal gastrectomy (1-year: 79.83%, 2-years: 61.43% and 5-years: 51.26%) while the worst survival rates were observed with total gastrectomy (1-year: 66.67%, 2-years: 42.86% and 5-years: 19.05%).

Patients with stage I GC (1-year: 96.67%, 2-years: 83.33%, and 5-years: 73.33%) had better survival rate as compared to others.

DISCUSSION

In the present, total 211 patients were included who were histologically proven cases of GC. More than two-third patients with gastric carcinoma (GC) with Male: female 2.35:1 found in the present study. In study done by

Heemskerk VH et al, a total of 235 patients were included, 141 male and 94 females.¹⁸ Literature also suggest that GC is the fifth most common carcinoma

among males and seventh most common carcinoma among females in India.³

Table 6: Post-operative survival.

Variables	Post-operative survival								
	1-year			2-years			5-years		
	Lost to follow-up	N	%	Lost to follow-up	N	%	Lost to follow-up	N	%
Type of surgery									
Subtotal gastrectomy (N=119)	1	95	79.83	2	73	61.34	1	61	51.26
Upper partial gastrectomy (N=61)	2	43	70.49	3	31	50.82	2	25	40.98
Total gastrectomy (N=21)	1	14	66.67	1	9	42.86	2	4	19.05
Stage of disease									
Stage I (N=30)	1	29	96.67	2	25	83.33	1	22	73.33
Stage II (N=75)	1	62	82.67	2	48	64.00	1	41	54.67
Stage III (N=96)	2	61	63.54	2	40	41.67	3	27	28.13
Total (N=201)	4	152	75.62	6	113	56.22	5	90	44.78

In Asia, GC is the second-most common cancer among men and third-most among females.¹⁹ The age-group of 51-60 years had maximum number of patients (36.97%) with GC followed by the age-group of 41-50 years (29.38%) with mean age of patients was 51.67 ± 23.34 years in the present study. GC, specifically, adenocarcinoma is most commonly found in patients of the middle aged and elderly and has been found less frequently in patients under 40 years of age.²⁰ The risk factors for development of GC are positive family history, radiation exposure, older age, male sex, lack of physical activity and low socioeconomic status.²¹

The urban population (62.56%) was commonly affected as compared to rural population (37.44%) as per the findings of the present study. Disparities in the prevalence, mortality, and survival of different carcinoma between urban and rural areas in reflect the effects of exposure to different risk factor, education, and difference in medical availability.²²

Improved and easily accessible medical services in urban areas can greatly increase in the number and early detection as well as prolong the survival of patients living in the urban area as compared to the patients of rural areas.

As per the symptoms representation in the present study, a majority of patients with GC were presented with epigastric pain (93.84%) followed by weight loss (87.68%) and anorexia (62.56%) with very few patients (10.43%) had Malena or hematemesis. In the early stages of GC, patients are usually asymptomatic or have very nonspecific symptoms such as dyspepsia.²³ The symptoms, like, persistent epigastric pain, anorexia, and weight loss are found usually in advanced stages of GC.

Malena or hematemesis signifies the presence of ulcerated tumors.²³ The absence of specific symptoms, particularly in early stages of GC, responsible for delayed diagnosis.²³ In Asian countries like India where no early detection programs are implemented, approximately 80% of patients are diagnosed at advanced stages of GC.²⁴

Maximum number (36.97%) of patients had tumor stage T4 followed by T3 (34.12%). According to lymph nodes involvement, 31.75% of patients belong to N0 stage. As per overall staging of the disease, 14.22% of patients had stage I GC while 36.49% and 49.29% of patients had stage II and III GC, respectively in the present study. Similar type of pattern was observed in study done by Mickevicius A et al.²⁵

In the present study, 58.77% of patients underwent subtotal gastrectomy, 30.81% of patients underwent upper partial gastrectomy; while very few patients (10.43%) underwent total gastrectomy. Surgical resection of tumour remains the primary treatment for GC, as such it is the only reliable possibility of a curative treatment.²⁶

The aim of surgical resection was to remove as completely as possible macroscopically visible tumor tissue and to obtain histologically free surgical margins.²⁷ The type of operative procedure usually decided pre-operatively but many times it changed intra-operatively depending on spread of carcinoma, i.e., tumoral infiltration through the gastric wall, tumoral extension to adjacent organs, and lymph node involvement.²⁷

As per the criteria of post-operative mortality 4.74% post-operative mortality was noted in the present study. Similar post-operative mortality rate of 4.3% was found in the study done by Ciesielski M et al.²⁸

The major limitation in the management of patients with GC is late diagnosis often in advanced stage.²⁹ Also the GC is the disorder of middle and older age groups, the patients are often in advanced age and have associated serious comorbidities.^{20,30} Major surgery in such type of patients invariably associated with substantial morbidity and mortality.³⁰ Post-operative serious complications are likely to delay healing of the patients as well as initiation of adjuvant therapy. In both situations, it may negatively impact overall survival and increase costs.³¹

On analysis of post-operative survival of patients with GC in the present study, overall survival of the patients was 75.62%, 56.22% and 44.78% at the end of 1-year, 2-years and 5-years. Better survival rate was observed in patients underwent subtotal gastrectomy while the worst survival rates were observed with total gastrectomy. Patients with stage I GC had better survival rate as compared to other stages of GC.

The studies from different geographical location have different 5-years survival rates - China:29.6%, Thailand:4.4%, USA:37%, Switzerland:22% and France: 30%.³² As in the present study, the patients with proven distant metastatic disease and/or in whom only palliative surgery was performed -which significantly deteriorate survival rate- were excluded, higher 5-years survival rate has been observed in the present study.

The patients' survival depends on type of gastrectomy, age, disease stage, and metastases.^{33,34} As discussed earlier, more than 80% of patients with GC are diagnosed at advance stage when conventional therapies such as gastrectomy, chemotherapy, or radiation therapy are not effective in improving the patients' survival including 5-years survival rate.^{24,35,36} There are some limitations of the present study, like smaller sample size, single centre study, exclusion of metastatic cases, and non-association of other treatment modalities. Despite of these limitations, the longer regular follow-up with very few drop-outs/lost to follow-up are major plus-points of this study.

CONCLUSION

The results of the present study clearly showed that despite of optimum surgical treatment in present clinical set-up, there is low survival rate in patients with gastric carcinoma. Delayed diagnosis of gastric carcinoma, the major limitation and drawback, responsible for this poor survival rates. The screening programs must be implemented for early diagnosis which can improve survival as well as quality of life of the patients with gastric carcinoma.

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