

Original Research Article

A prospective analysis of management of carcinoma stomach

Rajashekara Babu Gangappa*, Thejas Savasere, Prashanth Basappa Chowdary

Department of General Surgery, Bangalore Medical College and Research Institute, Bangalore, Karnataka, India

Received: 19 September 2016

Revised: 02 October 2016

Accepted: 20 October 2016

*Correspondence:

Dr. Rajashekara Babu Gangappa,

E-mail: grajashekarababu1962@gmail.com

Copyright: © the author(s), publisher and licensee Medip Academy. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

ABSTRACT

Background: Gastric carcinoma is a malignant epithelial tumour of the gastric mucosa with glandular differentiation. It applies to tumours arising in the distal stomach, body stomach and tumours arising in the proximal 5 cm, but not crossing the esophago-gastric junction. It is the fourth most common cancer and the second leading cause of cancer death. Its incidence is increasing and is especially prevalent in Asia. Its prevalence is four times higher in South India than North India. The objective of this study was to study the aetiology, clinical features, evaluation of carcinoma stomach, surgical management and post-operative complications of carcinoma stomach.

Methods: This was a prospective study of patients with gastric carcinoma who were surgically managed at Victoria Hospital, Bangalore, India between September 2013 and April 2016.

Results: The age group with the maximum incidence of gastric carcinoma was between the ages of 51-60. 61.54% of the patients followed a mixed diet and the rest were vegetarians. 50% of the patients were smokers only, 19.23% gave history of only alcohol consumption and 15.38% of the patients had history of both alcohol consumption and smoking. 55.77% of the patients presented with T3 disease and 19.23% of the patients had M1 disease. 42.31% of the patients had N1 disease, 34.62% of the patients had N2 disease, 19.23% of the patients had N3 disease and the rest had N0 disease. 75% of the patients underwent resection with a curative intent and the rest 25% had palliative procedures. On follow-up, 19.51% of the patients who underwent a curative resection expired and 80.48% are surviving. 81.48% of the patients who underwent a palliative procedure expired and 18.51% are surviving.

Conclusions: Diet plays an important role in carcinoma of the stomach. A high index of suspicion is important in the diagnosis. Surgery is the only potentially curative form of treatment and the prognosis after curative surgery for early gastric cancer has been excellent. There is a need for early diagnosis so that the disease can be treated adequately which directly translates into an improved survival.

Keywords: Alcohol drinking, Early detection of cancer, Smoking, Stomach neoplasms

INTRODUCTION

Carcinoma stomach is defined as a malignant epithelial tumour of the stomach mucosa with glandular differentiation. Gastric cancer is a relatively common and serious disease. It is fatal and effective treatment has remained unresolved. It is a disease of the elderly, with peak incidence in the seventh decade of life. Worldwide,

gastric cancer is the fourth most common cancer and second leading cause of cancer death. Carcinoma stomach accounts for about 7,34,000 deaths annually.¹ It has an increasing trend in developing countries and is especially prevalent in Asia. Factors associated with increased risk of gastric carcinoma include nutritional (salted food, high nitrate, complex carbohydrate consumption), environmental (contaminated water, smoking, lack of refrigeration), social (low social class),

medical (prior gastric surgery, adenomatous polyps, gastric atrophy). However, early infection with *Helicobacter pylori* is a predominant risk factor which predisposes to subsequent development of gastric carcinoma.

The diagnosis of carcinoma stomach is mainly based on upper gastrointestinal endoscopy with biopsy. It allows visualization of the tumour and provides tissue for pathological examination. Other modality used in computed tomography (CT) scan, which plays an important role in evaluation of metastatic disease.

Surgical resection is the only curative treatment for gastric cancer.² A complete margin negative (R0) resection is the only potentially curative treatment for gastric adenocarcinoma.³ A recently published study from the Japan Clinical Oncology Group showed a 69% overall 5-year survival rate in patients with clinical curable T2b, T3, T4 gastric cancer, treated with D2 gastrectomy alone (no chemotherapy).⁴ A study by Cho CS and Bennan MF concluded that adequacy of lymphadenectomy had clearly been shown to improve survival, particularly in patients with stage III gastric cancer.⁵ Unfortunately, the existing data suggests that the incremental survival benefit attendant to adjuvant treatment if marginal, particularly in those patients who have had an adequate resection.⁵ In patients with gross unresectable, metastatic or recurrent disease, palliative chemotherapy has not been demonstrated to conclusively prolong survival, but occasionally, a patient has a dramatic response.

The objective of this study was study the aetiology, clinical features, evaluation of carcinoma stomach, surgical management and post-operative complications of carcinoma stomach.

METHODS

A total of 156 patients were identified and included in the study between September 2013 and April 2016. This is a prospective study conducted over two and a half years. All patients that participated in the study were treated at Victoria Hospital, which is attached to Bangalore Medical College and Research Institute, Bangalore, Karnataka, India.

After admission, patients and relatives were interviewed for detailed history and a thorough clinical examination was performed. Relevant diagnostic investigations included complete blood picture, renal function tests, liver function tests, serum electrolytes, chest x-ray, upper gastro-intestinal endoscopy with biopsy of the lesion, contrast enhanced computed tomography (CECT) of the abdomen and pelvis and 2D echocardiography (for select patients).

The stage of the tumour was determined by investigations and operative procedures were broadly divided into

curative and palliative based on the stage. The operative procedure selected for a patient was based on the stage of the tumour, the presenting symptoms, the general condition and nutrition of the patient.

Follow-up was planned one month after surgery followed by 3 months and then at 6 months. During follow up patients were examined thoroughly and complications, if any, were managed.

RESULTS

In this study, a total of 156 patients participated between September 2013 and April 2016. Out of the 156 patients, 99 were male and 57 were female. 40.38% (63) patients were in the sixth decade of their lives. 76.92% (120) patients were between the ages of 40 and 70 years. 61.54% patients were identified to have history of consumption of poultry feeds and fish (smoked/salted). 50% patients were smokers, 19.23% were alcoholics and 15.38% were both smokers and alcoholics.

Pain abdomen, loss of appetite and loss of weight were the predominant symptoms seen in 69.23%, 67.31% and 61.54% respectively followed by vomiting which was seen in 57.69%. Hematemesis and melena was seen in less than 20% patients.

Visible gastric peristalsis was the major clinical sign identified in 34.62% followed by mass abdomen in 23.08%. A few patients presented with hepatomegaly, palpable Virchow's node, ascites and peritonitis. Close to 20% patients had no demonstrable clinical sign.

Endoscopically, ulcerative variety (63.46%) was encountered more often than polypoid (32.69%) and irregular mucosa (3.85%). Majority of the lesions were identified at the pylorus (73.08%) followed by lesser curvature (15.38%). Rest of the lesions were identified at the greater curvature. 6 patients had linitis plastica which was confirmed on CT abdomen.

55.77% patients had T3 disease and 30.77% patients had T2 disease. Only 2 patients had T1 disease. Metastatic disease in the form of liver nodules or ascites was identified in 19.23%. All but 6 patients were negative for lymph nodes. N1 status accounted for 42.31% of patients. N2 and N3 status was noted in 34.62% and 19.23% respectively.

Most patients (61.54%) in the study underwent gastrectomy with Billroth II anastomosis. Total gastrectomy with Roux-en-Y reconstruction was done in 13.46%. Palliative surgery was done in 25% of the patients with 17.31% undergoing gastro-jejunal; bypass and 7.69% patients undergoing a feeding jejunostomy. Among patients who underwent surgery with a curative intent, 48.08% patients underwent a D1 resection and 26.92% patients underwent a D2 resection.

There was no peri-operative mortality noted in this study. Respiratory complications (atelectasis and pneumonia) were noted in 4 patients. 4 patients had wound infection. 2 patients had anastomotic leak and 1 patient had post-operative hematemesis. All post-operative complications were managed conservatively. Post-surgery patients were maintained on a chemotherapy regimen with epirubicin, cisplatin and 5-fluorouracil.

All patients were followed up for a minimum period of six weeks.

DISCUSSION

This study concludes that the most common age group for the incidence of carcinoma stomach is 6th decade. In our study 40.38% of the patients were in the sixth decade. In a similar study conducted by Chaudhary SMSA et al, they also concluded that the most common age group for the presentation of carcinoma stomach is 6th decade.⁶ From the results, it is implied that the male:female ratio in this study is 1.74:1. Studies conducted by Parkin et al and Plummer et al it can be inferred that the ratio of male:female patients is 1.82:1 and 1.3:1 respectively.^{7,8}

Table 1: Comparison of results with other published studies.

Parameter	Current study	Chaudhary SMSA et al ⁶	Parkin DM et al ⁷	Plummer JM et al ⁸	Xiang-Fu Zhang et al ⁹
Age group	6 th decade	6 th decade	-	-	-
Male to female ratio	1.74:1	-	1.82:1	1.3:1	-
Mixed diet	61.54%	57.8%	-	-	-
Smoking	50%	52.46%	-	-	-
Pain abdomen	69.23%	73.77%	-	-	-
Mass abdomen	60.66%	23.08%	-	-	-
Site of lesion	Pylorus-antrum (73%)	Pylorus-antrum (79%)	-	Pylorus-antrum (56%)	-
T1,T2, T3, T4, M1	3.85%, 30.7%, 55.7%, 7.69%, 19.23% respectively.	-	-	-	7.3%, 17.6%, 49.5%, 25%, 0% respectively.
Lymph node status	3.85%, 42.31%, 34.62%, 19.23% respectively	-	-	-	10.5%, 17.4%, 47.4%, 24.7% respectively
Surgery performed	Distal gastrectomy with Billroth II - 61.54%, palliative procedure - 25%.	Distal gastrectomy with Billroth II - 51%, palliative procedure - 37.7%.			

With regard to diet and other habits, Chaudhary et al noted that 57.8% patients in his study consumed a mixed diet and 52.46% of the patients were smokers which also correlate with the present study findings.⁶ With respect to symptomology, Chaudhary et al found that 73.77% of the patients presented with pain abdomen which is similar to the finding in the current study. However, unlike the study conducted by Chaudhary et al, which showed that mass abdomen as the major clinical sign (seen in 60.66%), this study had only 23.08% patients with mass abdomen.⁶

In the current study the most common site for the site of the lesion was noted to be at the pylorus-antrum region accounting for 73%. Chaudhary et al noted that 79% of his patients had their lesions at pylorus-antrum region and Plummer JM et al confirmed that 56% of his patients had tumours in the antrum-pylorus region.^{6,8}

In this study it was also noted that the incidence of T1, T2, T3, T4 and M1 disease was 3.85%, 30.7%, 55.7%, 7.69% and 19.23% respectively. In a study conducted by Zhang et al the incidence of T1, T2, T3, T4 and M1 disease was 7.3%, 17.6%, 49.5%, 25% and 0% respectively.⁹ The status of lymph nodes in this study was 3.85% had N0 status, 42.31% had N1 status, 34.62% had N2 status and 19.23% had N3 status. In a similar study done by Zhang et al 10.5% patients had N0 status, 17.4% had N1 status, 47.4% were N2 and 24.7% had N3 status.⁹

In the present study 61.54% of the patients underwent distal gastrectomy with Billroth II procedure and 25% of the patients underwent a palliative procedure. Chaudhary et al recorded that only 51% of the patients underwent distal gastrectomy with Billroth II procedure and 37.7% of the patients underwent a palliative procedure.⁶

The major limitation of this study was the lack of randomization and a relatively small number of patients that were included in the study. Currently, plan is underway to start a randomized control trial on the same subject.

CONCLUSION

Carcinoma of the stomach is a common disease of the middle age and elderly with most common age group being 51-60 years. It is more common in males than in females. Diet plays an important role in the development of carcinoma stomach. Smoking is a risk factor for the development of carcinoma stomach. The presentation of carcinoma stomach is nonspecific with pain abdomen, loss of appetite and loss of weight being the most common symptoms. The physical signs of mass abdomen, visible gastric peristalsis though diagnostic are present in a relatively few number of patients. Hence a high index of suspicion is important in the diagnosis.

The associated co-morbidities are relatively common in this disease owing to the age group. The common co-morbidities are hypertension, diabetes mellitus and ischemic heart disease. Majority of patients present in advanced stage owing to nonspecific symptoms and delay in diagnosis. Upper gastro-intestinal endoscopy forms the most important diagnostic tool. Surgery is the only potentially curative form of treatment. Curative surgery is not possible in a substantial number of patients. There is a need for early diagnosis so that the disease can be treated adequately which translates into an improved survival. The prognosis of curative surgery for gastric cancer has been excellent. Hence there must be a liberal use of upper gastro-intestinal endoscopy in the elderly population to facilitate early detection of tumour.

ACKNOWLEDGEMENTS

Authors would like to sincerely thank all staff and residents in the Departments of General Surgery and Anesthesia at Bangalore Medical College and Research Institute for their contributions. They would also like to thank all the members of nursing staff who were involved in patient care during this study.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: The study was approved by the institutional ethics committee

REFERENCES

1. Gong DJ, Miao CF, Bao Q, Jiang M, Zhang LF, Tong XT, et al. Risk factors for operative morbidity and mortality in gastric cancer patients undergoing total gastrectomy. *World J Gastroenterol.* 2008;14;14(42):6560-3.
2. Dicken BJ, Bigam DL, Cass C, Mackey JR, Joy AA, Hamilton SM. Gastric adenocarcinoma: review and considerations for future directions. *Ann Surg.* 2005;241(1):27-39.
3. Mullen JT. Subtotal gastrectomy for gastric cancer. Fischer JE (ed). *Fischer's mastery of surgery*, Sixth ed.: Wolters Kluwer; 2012: 1067-79.
4. Sasako M, Sano T, Yamamoto S, Kurokawa Y, Nashimoto A, Kurita A, et al. Japan clinical oncology group D2 lymphadenectomy alone or with para-aortic nodal dissection for gastric cancer. *N Engl J Med.* 2008;359(5):453-62.
5. Cho CS, Brennan MF. Gastric adenocarcinoma. Cameron JL (ed). *Current Surgical Therapy*, Ninth ed.: Elsevier Health Sciences; 2007:105-10.
6. Chaudhary SMSA, Hussain MM, Islam MA. The clinical and peri-operative findings of carcinoma stomach: 61 operated cases. *JCMCTA.* 2008;19(2):16-22.
7. Parkin DM, Bray F, Ferlay J, Pisani P. Global cancer statistics, 2002. *CA Cancer J Clin.* 2005;55(2):74-108.
8. Plummer JM, Gibson TN, McFarlane ME, Hanchard B, Martin A, McDonald AH. Clinicopathologic profile of gastric carcinomas at the University Hospital of the West Indies. *West Indian Med J.* 2005;54(6):364-8.
9. Zhang XF, Huang CM, Shan HL, Yuan XW, Wang C, Guang GX. Surgical treatment and prognosis of gastric cancer in 2613 patients. *World J Gastroenterol.* 2004;10(23):3405-8.

Cite this article as: Gangappa RB, Savasere T, Chowdary PB. A prospective analysis of management of carcinoma stomach. *Int Surg J* 2017;4:381-4.