

SURGICAL OUTCOME OF UPPER GASTROINTESTINAL MALIGNANCIES

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ABSTRACT

Objective: To evaluate the surgical outcome of upper Gastrointestinal (GI) malignancies.

Material and Methods: This cross-sectional study was conducted at Department of Surgery, Khyber Teaching Hospital, Peshawar from January 2012 to December 2014. One hundred and ninety patients of either gender, diagnosed as having upper GI malignancy (esophageal, gastric, pancreatic, gall bladder) on the basis of histopathology were included in the study. Detailed information was recorded about the age and gender distribution, staging of respective cancer, surgical management, and post-operative morbidity and mortality.

Results: Of the 190 patients with upper GI malignancies, 88 (46%) had esophageal carcinoma; 47 (25%) had gastric carcinoma, 27 (14%) had pancreatic carcinoma and 28 (15%) had gall bladder cancer. 80.68% of the esophageal cancers were adenocarcinomas and 19.31% were squamous cell carcinomas based on histopathology reports. Males were predominantly affected (69.31%). Majority (73.86%) patients were diagnosed in stage III esophageal cancer. Transhiatal esophagectomy was the surgery of choice in 78.40% of the patients with esophageal cancer. Post-operatively, 30 day mortality was 11%. Among the gastric cancer patients, 65% had adenocarcinoma; 20% had squamous cell carcinoma; 10% had Gastrointestinal Stromal Tumor (GIST); and 5% had gastric lymphoma. Again, males were predominantly involved (55%). Majority (56.52%) of the patients were diagnosed in stage IV of gastric carcinoma. Only 10 patients underwent surgery, while the remaining 13 received palliative therapy. 30-day post-operative mortality was 20%. Three of the 27 pancreatic cancers were adenocarcinomas. Males were predominantly affected (66.66%). Five patients underwent Whipple's Procedure, of whom 2 expired. Female to male ratio in gall bladder cancer was 3:1 (75%: 25%). Ninety percent of the patients presented with advanced disease. Six month survival rate was <2%.

Conclusion: Esophageal and gastric carcinomas are the most frequently encountered upper GI malignancies. If diagnosed at an early stage, all malignancies carry a better prognosis with appropriate surgical intervention. Late presentation carries a poor prognosis.

Key Words: Gastrointestinal, Esophageal, Gastric, Pancreatic, Gall bladder, Adenocarcinoma, Squamous cell carcinoma.

INTRODUCTION

Cancers of the upper gastrointestinal system are among the most lethal of all malignancies. The majority of these malignancies are detected at an advanced stage due to the sinister nature of the onset of symptoms and their similarity in early stages to benign causes of dysphagia and dyspepsia. Only earlier diagnosis, more accurate staging methods, and more effective treatment protocols offer any hope of improving the dismal prognosis of these tumors.^{1,2}

Most people with cancer of the upper gastro-intestinal system survive for only a few months after diagnosis. Long-term (five-year) survival rates for England and Wales for esophageal, stomach and pancreatic cancer are 9%, 12%, and 3% respectively.³ These survival rates are generally worse than those reported by other developed countries. This is particularly apparent in stomach cancer, for which the European average five-year survival rate is 21%.³ Surgery is difficult and hazardous. One English region has reported that 15% of patients with esophageal cancer and 18% with pancreatic cancer die within a month of surgery.³ Equivalent figures from specialist centres are below 5%.⁴ Upper gastrointestinal cancers, led to 18,250 deaths in England and Wales in 1997, or 13.5% of all cancer deaths.⁴

A study carried out in Northern Punjab area of Pakistan reported that the common malignant tumor in males was carcinoma of stomach and in females carcinoma of esophagus.⁵ Asian race is no different from

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other races as far as gastric carcinoma is concerned. Another study conducted in Institute of Radiotherapy and Nuclear Medicine, Peshawar, Pakistan compared the most common cancers in Pakistanis and Afghan refugees resident in the area.⁶ Among adult males with different types of cancers, 4.6% Pakistanis and 16.6% Afghan refugees had esophageal cancer. Among adult females, 4.1% Pakistanis and 13.1% Afghan refugees had esophageal cancer.

Mortality rates for gastric and esophageal cancers have been changing over recent years. Chemotherapy can have some impact on survival and may help with symptom control.¹ Radiotherapy is only appropriate for a small minority of patients with esophageal cancer.² Most patients require palliative interventions, in particular stent insertion to permit swallowing or treat jaundice. Pain control is crucial, especially in pancreatic cancer. Surgical interventions such as destruction of the local nerve plexus are often effective.

Most of the data available for upper GI malignancies is from the West. There is a genuine need to collect data about the incidence, gender distribution, stage of cancer diagnosis, and management provided to upper GI cancers presenting to our hospitals. Keeping this in mind, the present study was conducted to evaluate the surgical outcome of patients presenting with upper GI malignancies to Khyber Teaching Hospital, Peshawar, Pakistan.

MATERIAL AND METHODS

This hospital-based descriptive study was carried out in the Department of Surgery, Khyber Teaching Hospital, Peshawar from January, 2012 to December 2014. One hundred and ninety patients of both genders with biopsy-proven esophageal, gastric, pancreatic or gall bladder cancer were included in the study. A written informed consent was taken from the patient or attendant about being enrolled in the study. Patients were stratified into 4 groups depending on the type of cancer (esophageal, gastric, pancreatic or gall bladder). Each group of patients was evaluated for the age and gender distribution, histopathologic classification, stage of cancer at presentation, treatment given (whether surgical or palliative), and post-operative morbidity and mortality. The data was compiled and formatted in tables and charts.

RESULTS

A total of 422 patients presented with some form of cancer. Of these, 190 had biopsy-proven upper GI malignancies. Of the 190 patients with upper GI malignancies, 88 (46%) had esophageal carcinoma; 47 (25%) had gastric carcinoma, 27 (14%) had pancreatic carcinoma and 28 (15%) had gall bladder cancer.

Of the 88 patients with esophageal cancer, 61 (69.31%) were males and 27 (30.68%) were females. Mean age at the time of presentation was 54 years.

The age distribution is shown in Table 1. Stage of esophageal carcinoma at the time of presentation is highlighted in Table 2 while the surgeries performed on these patients are outlined in Table 3. Forty-two (47.72%) patients developed complications post-operatively; Thirty day mortality for esophageal carcinoma post-operatively was 11%; 8 patients expired within a month; 5 patients from aspiration pneumonia, 2 patients from ventilator-associated pneumonia and one patient from anastomotic leak resulting in mediastinitis.

Out of 47 patients diagnosed with gastric cancer, 26 (55%) were males and 21 (45%) were females. Mean age at presentation was 52 years. Twenty-three patients were planned for surgery. Sixty-five percent of the patients had gastric adenocarcinoma, 20% had squamous cell carcinoma, 10% had Gastroin-

Table 1: Age distribution of patients with esophageal carcinomas

Age (years)	N (%)
< 20	0
20 – 40	13 (14.77)
41 – 60	66 (75)
>60	09 (10.22)
Total	88 (100)

Table 2: stage of esophageal cancer at the time of presentation

Stage	N (%)
Stage 1	0 (0)
Stage II	8 (9.09)
Stage III	65 (73.86)
Stage IV	15 (17.04)
Total	88 (100)

Table 3: surgeries performed for esophageal cancer

Surgical Procedure	N (%)
Transhiatal esophagectomy	69 (78.40)
Mckeown	03 (3.40)
Birmingham	01 (1.13)
Palliative	15 (17.04)
Total	88 (100)

Table 4: Post-operative morbidity associated with gastric cancer

Post-operative Complications	N %
Wound infection	04
Atelectasis	03
Duodenal blow out	0
Postoperative vomiting	06
Recurrence of cancer	02

testinal Stromal Tumour (GIST), and 5% had gastric lymphoma. Post-operative morbidity associated with gastric cancer is shown in Table 4.

Total patients admitted with pancreatic cancer were 27, of whom 18 (66.66%) were males and 9 (33.33%) were females. Mean age at presentation was 57 years. 5 (18.51%) patients had Whipple's operation, 15 (55.55%) received a bypass procedure, and 7 (25.92%) were treated conservatively with stenting. Out of the 5 patients who underwent Whipple's operation, 2 expired during the post-operative period. Out of 28 patients admitted with gall bladder cancer, 21 (75%) were females, and 7 (25%) were males. Mean age at presentation was 45 years. 90% of the patients presented at advanced stages. Surgery was planned in 20 patients, of whom 13 underwent cholecystectomy. Seven cases were unresectable per-operatively.

DISCUSSION

Esophageal and gastric malignancies are generally considered as separate disease entities. It is now recognized that cancer of the esophagus and stomach in 75% of cases is an adenocarcinoma located within 5cm of the gastro-esophageal junction rather than either purely esophageal or purely gastric¹.

The results of our study show that majority of the patients presenting with upper GI malignancies have esophageal cancer. According to Northern Ireland Cancer Registry, cancer of the stomach is on the fall, while levels of esophageal cancer are on the rise.⁷ In the past, over 95% of esophageal malignancies were squamous cell carcinomas. Over the past two decades, however, there has been a dramatic increase of adenocarcinoma arising in columnar cell-lined Barrett's mucosa, accounting for greater than 50% of all esophageal cancers in some areas.^{1,8} The incidence of adenocarcinoma of the esophagus is also rising rapidly in Western Europe and North America.⁹ It can be an aggressive disease and disseminates early. This finding is seconded by our study which reports adenocarcinoma in 80.68% of the patients with esophageal cancer; however its association with Barrett's mucosa has not been discerned.

Most of the patients with upper GI malignancy enrolled in our study were above 40 years of age. This is against other studies where majority of patients with Upper GI cancer are over 70 years old. These cancers are diagnosed in 1 per 100,000 people under the age of 40, 20 per 100,000 in those aged 45-54, and 155 per 100,000 in the over 55 age-group.¹⁰ A study conducted by American College of Surgeons in 1999 revealed that patients with esophageal cancer who underwent surgery initially, the pathology revealed stage I (13.3%), II (34.7%), III (35.7%), and IV (12.3%) disease.¹¹ For patients with various stages of squamous cell cancer, radiation therapy plus chemotherapy were the most common treatment modalities (39.5%) compared with surgery plus adjuvant therapy (13.2%). For patients with adenocarcinoma, surgery plus adjuvant therapy were the most common treatment methods¹².

Men are twice as likely to get stomach cancer as women. This is borne out by a study conducted in Northern Punjab which found 67% of patients with carcinoma stomach being males and 15% being younger than 40 years.⁵ Somewhat similar findings were shown by our study where 55% of the males had gastric cancer and mean age at presentation was 52 years. The most vulnerable group is considered to be men over 50 years. The incidence increases incrementally after age 40 and peaks in the seventh decade. About 90% of stomach tumors are adenocarcinomas.¹² This is in accordance with our study which diagnosed 65% of the gastric cancer patients with adenocarcinoma.

About a third of patients with esophageal cancer undergo surgery. Success rates are meager and operative mortality and morbidity can be high. In England one third of patients with esophageal cancer undergo surgery, of which about 14% survive for 5 years¹⁴. In Yorkshire just under half of all patients with gastric cancer undergo surgery, with 5 year survival rate of 20%.¹⁵ In south west England in 1996-7 perioperative mortality was 14%.¹⁴ Surgery for pancreatic cancer is complex and hazardous. In Yorkshire between 1986 and 1994 17.7% of patients died within 30 days of surgery and fewer than 3% survived 5 years¹⁶. Such poor results are not universal, however; specialist institutions report 5 year survival rates as high as 20%.¹⁷⁻²⁰ Outcomes for most patients with UGI cancers in the UK are currently poor. This may largely be due to the nature of these tumours.

A study carried out in China evaluated 152 patients with gallbladder cancer.²¹ Of these 152 patients, 8 presented in stage 0, 10 cases in stage I, 25 in stage II, 21 in stage IIIA, 21 in stage IIIB, 24 in stage IVA, and 43 cases in stage IVB according to the new Tumor Node Metastasis (TNM) VII staging.²⁸ Patients underwent simple cholecystectomy, 57 cases had radical cholecystectomy, and 28 cases had palliative surgery. Thirty-nine cases were inoperable. Patients with stages 0 and I disease demonstrated no statistically significant difference in survival time between those receiving radical cholecystectomy and simple cholecystectomy. The prognosis of stage II patients with radical cholecystectomy was better than that with simple cholecystectomy. Radical cholecystectomy was significantly superior to other surgical options for stage III patients. For stage IVA patients, radical cholecystectomy had similar outcome as did palliative resection and non-surgical treatment. For stage IVB, patients who underwent palliative resection significantly outlived those with non-surgical treatment.

CONCLUSION

An understanding of the risk factors of upper GI malignancies and their common symptomatology can increase awareness among patients and reduce the poor prognosis associated with late presentation and inoperability of these malignancies.

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AUTHOR'S CONTRIBUTION

Following authors have made substantial contributions to the manuscript as under:

- Yousaf A:** Concept and idea.
Ahmad M: Manuscript writing.
Waheed R: Bibliography.
Muslim M: Literature review.
Aurangzeb M: Overall supervision.
Ahmed N: Data collection.
Maroof A: Critical analysis.

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.