

## ORIGINAL RESEARCH

# Gastric cancer features and outcomes at a tertiary teaching hospital in Addis Ababa, Ethiopia: A 5-year retrospective study

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## Abstract

### Background

There is abundant literature about gastric cancers in the west and Asia but there are only a few published studies from Africa in general and in Ethiopia in particular. This study aimed to determine the pattern of patients seen in GI surgery unit with gastric cancers in the department of surgery at TikurAnbessa tertiary teaching hospital in Ethiopia.

### Methods

This was a 5-year retrospective review of patients seen with a diagnosis of gastric cancer to Tikur Anbessa tertiary teaching hospital. All patients whose medical records could be retrieved and with biopsy proven gastric cancer were included in the study. Socio-demographic data, risk factors, type of cancer, part of stomach involved, operability, type of surgery and outcome analyzed. SPSS version 23 were used for analysis.

### Results

We were able to retrieve the files of 95 patients seen and managed in GI surgery unit of the department of surgery during the study period. 54 (56.8%) were males, nearly a quarter (23.2%) were below the age of 45 years. Weight loss, epigastric pain and vomiting were the most common presenting complaint and anaemia and abdominal mass were the two most common findings on examination. The antrum and pylorus were the most common sites. Although 60% were adenocarcinomas, gastrointestinal stromal disease and lymphomas account for 19% and 8% respectively. Only 38 (40%) underwent either palliative or curative surgery. There were 4 postoperative deaths and making postoperative mortality 10.5%.

### Conclusions

A significant percentage of patients with gastric cancer seen in our institution are younger and malignant GIST and lymphoma are commoner than expected. Most patients were not candidates' even palliative surgery. A well-designed prospective study would more clearly elucidate the magnitude of the problem.

**Keywords:** gastric cancer, Ethiopia

## Introduction

Gastric cancer is one of the most common cancers worldwide(1) but considered rare in sub Saharan Africa despite the high prevalence of *Helicobacter Pylori*(2). It is a cancer with significant socioeconomic, ethnic, geographical difference in its distribution.

Even with in Africa there is a significance variation in incidence ranging from 0.3/100000 in Botswana to 20.3/100000 in Mali(2). In Ethiopia available literatures put gastric cancer 9<sup>th</sup> among all cancers in incidence(3) but it is 4<sup>th</sup> most com-

mon cancer among upper GI cancers in the Sudan(4).

More than 90% of malignancies in the stomach are adenocarcinoma, lymphoma, malignant GIST, carcinoids and others accounting for the remaining 10%. The intestinal and diffuse types of adenocarcinoma as described by Lauren differ in epidemiology, etiology, pathogenesis and biological behavior. Most gastric cancer occur sporadically although familial cases are well known to occur in up to 10%(5).

Even in advanced countries like the USA, most patients present with symptoms and advanced disease and have in-

**Table 1.** Sociodemographic characteristic and risk factors for malignant gastric Tumors at Tikur Anbesa Hospital, Addis Ababa, Ethiopia

Variable	n	%	
Sex	Male	54	56.8
	Female	41	43.2
Male to Female ratio of 1.3:1			
Age group (Mean±SD, 51.87±2; Range, 23-76)			
Age	<45	22	23.2
	45-65	62	65.3
	>65	11	11.6
Regional state	Addis Ababa	25	26.3
	Oromia	35	36.8
	Amhara	16	16.8
	Southern State	18	18.9
	Others	1	1.1
Smoking history	Present	5	5.3
	Absent	90	94.7
Alcohol history	Present	5	5.3
	Absent	90	94.7
Blood group	A	29	33.3
	B	14	16.1
	O	27	31
	AB	2	2.3
	unknown	15	17.2
H. Pylori status	Positive	8	8.5
	Negative	13	13.8
	Unknown	73	77.7

curable disease. Surgically curable early gastric cancers are asymptomatic and infrequently found in outside realm of screening programs(6).

Weight loss and persistent abdominal pain are the most common symptoms and palpable abdominal mass is a late but common sign at presentation(6).

Distal gastric cancers involving the antrum and pylorus are the most prevalent and often present with gastric outlet obstruction(7).

## Methods

This is a retrospective study to analyze the data on patients with gastric cancer in GI surgery unit of department of surgery of TASH from 2012 up to 2017. TASH is the oldest and biggest tertiary medical center in Ethiopia which has a population of over hundred million people. The hospital receives

patients from all over the country and it is here that the only radiotherapy center is located. The data were retrieved from registry books and patients file and the retrieval of information were done by a senior general surgery resident. SPSS version 23 were used for analysis. Proportions established for categorical variables and chie square test used to compare proportions. Significance level set at 5%.

Inclusion criteria: all patients with a histologic diagnosis of gastric cancer and information on age, sex, region, and full clinical record on clinical stage and treatment given were included. Gastric cancers not involving EGJ.

Exclusion criteria: patients registered but insufficient information or incomplete clinical records were excluded. EGJ cancers are also excluded as they are managed in cardiothoracic unit of department.

Study design: Ethical approval and clearance were gained

**Table 2.** Presenting symptoms and signs among patients with malignant gastric tumors at Tikur Anbesa Hospital, Addis Ababa, Ethiopia

	Presenting symptom		Presenting sign		
	n	%	n	%	
Epigastric pain	80	84.2	Abdominal mass	30	31.6
Anorexia	66	69.5	Anemia	43	45.3
Nausea/vomiting	80	84.2	Jaundice	2	2.1
Early satiety	30	31.6	Ascites	12	12.7
Weight loss	85	89.5			
Dysphagia	9	9.47			
Melena	12	12.6			

**Table 3.** Type of malignancy, site of stomach involved and metastatic sites in males and female patients with malignant gastric tumors at Tikur Anbesa Hospital, Addis Ababa, Ethiopia

Variable		Male	Female	Chi-square (95% CI)	P-value	Total n (%)
		n (%)	n (%)			
Type of malignancy	Adenocarcinoma	37 (68.5)	29 (70.7)	3.064	0.02	66 (69.5)
	GIST	12 (22.2)	7 (17.1)			19 (20)
	Lymphoma	3 (5.6)	5 (12.2)			8 (8.4)
	SCC	2 (3.7)	0 (0)			2 (2.1)
	Cardia	4 (7.5)	4 (9.8)			8 (8.4)
Site of stomach involved	Fundus	6 (11.1)	5 (12.2)	6.412	0.03	11 (11.6)
	Body	12 (22.2)	13 (31.7)			25 (26.3)
	Antrum & pylorus	22 (40.7)	7 (17.1)			29 (30.6)
	Diffuse involvement	10 (18.5)	12 (29.2)			22 (23.1)
	Liver	20 (21.7)	16 (17.4)			36 (39.1)
Site of metastasis detected	Peritoneum	18 (19.6)	14 (15.2)			32 (34.8)
	lymph nodes	11 (12.0)	15 (16.3)			26 (28.3)
	Pulmonary	1 (1.1)	4 (4.3)			5 (5.4)
	CNS	0 (0)	2 (2.2)			2 (2.2)
	Bone	0 (0)	2 (2.2)			2 (2.2)
	Ovaries	0 (0)	4 (4.3)			4 (4.3)

from AAU-MF IRB office. Data from the registration book and patient file were transferred to SPSS database and those patients with incomplete information excluded.

## Results

During the study period 131 patients were diagnosed to have gastric cancer in GI surgery unit of department of surgery but only 95 were included in the study as the information of the rest were incomplete.

54 (56.8%) were males and the rest were females with

a male to female ratio of 1.3:1. Patient's age ranges from 23 to 76 with mean age of 52 years. A significant proportion (23.2%) of patients were below the age of 45 whereas only 11.6% were above 65. 35 of 95 (36.8 %) patients came from Oromia regional state and 25 (26.3%) were from the capital, Addis Ababa (Table 1). A history of cigarette smoking and regular alcohol consumption were found only in 5 of 95 patients. Blood group A and O were found to be the most prevalent blood groups accounting for 33.3 % and 31% respectively (Table 1).

**Table 4.** Type of treatment to patients with malignant gastric tumors at Tikur Anbessa Hospital, Addis Ababa, Ethiopia

Type of treatment provided	n	%
<b>Inoperable</b>	57	60
<b>Operated</b>	38	40
<b>Surgery with curative intent</b>	14	14.7
Subtotal gastrectomy	12	12.6
Near total gastrectomy	2	2.1
<b>Surgery with palliative intent</b>	24	25.3
Wedge resection	12	12.6
Bypass gastrojejunostomy	12	12.6
<b>Chemotherapy Given</b>	37	38.9
Neoadjuvant	3	3.2
Adjuvant	14	14.7
For palliation alone	20	21.1
<b>Radiotherapy Given</b>	0	0

Weight loss, abdominal pain, nausea and / or vomiting were the most common symptoms whereas anemia followed by a palpable abdominal mass were the prevalent physical signs at presentation. Pre-operative imaging and in some laparotomy revealed the liver (39.1%) and the peritoneum (34.8%) to be commonest the sites of distant metastasis (Table 2).

Anthro-pyloric area affected in 30.5% followed by the body of stomach in 25 (26.3 %) and diffuse involvement was observed in 22 (23.2%) patients. Anthro-pyloric area is affected more in males and diffuse involvement of the stomach is observed more in females than males (Table 3).

Histopathology report showed 66/95(69.5%) had adenocarcinoma, 19/95 (20%) had malignant gastrointestinal stromal tumor, and 8/95 (8.4%) had gastric lymphoma but with a difference in prevalence of lymphoma and GIST in males and females (Table3).

57 of 95 patients (60 %) were not candidates for palliative or curative surgery either on preoperative evaluation or at laparotomy. Only 38 (40%) underwent surgery either for curative or palliation (Table 4). 14 of 95 patients (14.7%) had gastrectomy with curative intent.17 of the 38 who underwent surgery got chemotherapy and 20 of 57 patients who were not candidates for surgery were given palliative chemotherapy. Radiotherapy were not used on any of patient probably because scarcity of service in Ethiopia (Table 4).

Among the patients operated 8 patients had major morbidity with grade 3 and 4 Clavien-Dindo complications (those who needed re-exploration or developed organ failure) and four patient died making operative mortality of 10.5% but the rest of patients were discharged improved. 8

of 36 patients operated came back with recurrence during follow-up. The average follow-up patients who underwent surgery were four months.

## Discussion

The study showed that males are affected slightly more than females with a male to female ratio of 1.3:1 similar to study in Rwanda by Allison et.al but the previous study from the study hospital and another study from Uganda New Mulago Hospital found a higher ratio(8–10) . Studies have also shown African patients present at younger age and with more advanced states (11). A review article about gastric cancers in Africa by Akwi W, Rubayat R and Jamal A reported that gastric cancer in Africa is more common in younger (3rd & 4th decade) population(12). Gastric cancer in China is also reported to occur in younger people than in the west (5). In a similar fashion. 65.3% of our patients were noted to be between 45 and 65 years of age, though a significant proportion of patients were younger than 45 years (23.2%).

The mean age of our patients was 52 years, similar to the study in Tanzania by Mabula et al and in Nigeria by Ahmed et al (13)(8). A previous study from our hospital also showed a mean age of 48.2 years (9). A study from Rwanda by Allison et al also reported that the median age of their patients were 58 years and males account for 50.2 %.

A systematic review and meta-analysis by Bai-Lin Zhang et al reported blood group A to confer show an increased risk to gastric cancer (14). A similar finding was noted in our study as in this study which showed 33.3% of our patients had a blood group A.

This study and several others including one from New Mulango Hospital in Uganda by C.B R. lbgira have shown that weight loss and persistent epigastric abdominal pain are the most common symptoms at presentation(10).

Overt bleeding in the form of melena was found in only 12% of our patients, but anemia was the most common physical finding. This is in accordance with finding in most literatures where it is stated that overt bleeding occurs in less than 20% (15).

Physical findings of a palpable abdominal mass was found in 31% of our patients and it was found to be a sign of an advanced disease (6). Preoperative imaging and in some cases laparotomy showed that most patients had evidences of metastatic disease mainly to the liver and peritoneum. This has been the observation in a review article from Sub-Saharan Africa by Daouda et al and a previous study in our institution (16).

Antrum and pylorus were the most common sites of malignancy in this study (30.6%) as in the above review article by Daouda et al and in Uganda (16)(17).

In a study on gastric outlet obstruction in two Rwandan hospitals showed that malignancy was the cause in 67 %. The whole stomach was diffusely involved in 23, 2% of our patients but a slightly higher proportion of diffuse type of gastric cancer of 26.2% was reported from in Yaoundé, Cameroon (18)(19).

In our study, the anthro-pyloric area is affected more in males (40.7% in males vs. 17.1% in females) and diffuse involvement of stomach observed more in females (29.2% in females vs. 18.5% in males). This is similar to a study in Rwanda where the majority (58%) of patients with malignant gastric outlet obstruction were males (reference) and several studies that showed diffuse involvement are common in females (5, 14).

We were able to offer either a palliative or curative surgery for only 38 (40%) of our patients as opposed to a higher proportion of patients surgery in Kenya and Nigeria (8). A previous study by Johnson O. et al in this hospital, surgical resection was possible in more than 44% (either for palliation or cure).

Unlike literatures on malignancies of stomach, this study found that adenocarcinoma accounted only for 66% of our patients and significant proportion of patients were found to have malignant GIST and gastric lymphoma (16–18). This is in contrast to a Ugandan study that showed 95.5% to be adenocarcinomas (reference) but comparable to a study on Morocco that showed 72% to be adenocarcinoma and 22.8% malignant lymphoma (19).

In this study 8 patients had major morbidity with complications requiring re-exploration or developed organ failure among which four patient died making postoperative mortality of 10.5%. Our morality rate is in range of the figure reported from Kenya (16.1%), Nigeria (18.1%) and the study here in our institution of 18.6% (8).

## Conclusions

Cases of Gastric cancer diagnosed in out setting are usually at an advanced stage and significant proportion occur in younger patients. A prospective study is required for a better understanding of situations of gastric cancer and its management in Ethiopia as well as the rest of Africa.

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