RESEARCH ARTICLE

CLINICAL PATHOLOGICAL CHARACTERISTICS AND 1- YEAR SURVIVAL OF GASTRIC CANCER PATIENTS ATTENDING OCEAN ROAD CANCER INSTITUTE, TANZANIA

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ARTICLE INFO	ABSTRACT
	Background*:* Gastric cancer is one of the most common cancer worldwide and the second most common cause of death after lung cancer (6).GLOBOCAN recent (2018) estimate had shown that in Tanzania, the incidence of the new cases was 1353(3.2%) in both male and female which ranks 7th as well as 6th in terms of death, which accounts for almost 1323(4.6%) of all cancer cases diagnosed annually. Aim of this study was to determine the clinical-pathological characteristic and 1-year survival in gastric cancer patients at Ocean Road Cancer Institute, Tanzania. ***Methodology:*** This study was conducted in September 2021,retrospective hospital-based study that analyzed the medical records of patients diagnosed with gastric cancer at Ocean Road Cancer Institute from 2013 to 2017.Data extraction forms were used to extract information from files and analysis was be done by using SSPS version 23. ***Result****:* Among 150 documented cases of gastric cancer during this period 101(67.3%) were male and 49(32.7%) female., The most frequent presenting symptoms were abdominal pain followed by weight loss; the most common histopathology was adenocarcinoma, and the majority of patients presented with advanced disease stage III and IV (87.3%).Survival is good to those who treated with surgery and chemotherapy, Partial gastrectomy as better survival than total gastrectomy, and other chemotherapy regimens as better survival than capecitabine alone. ***Conclusion:*** The majority of our patients of gastric cancer were diagnosed at an advanced stage, the male and female were 2.4:1, common histopathology was adenocarcinomas. The study revealed that gastric cancer has a poor prognosis with a 1-year survival of 18.7%.

INTRODUCTION

Background: Gastric cancer is one of the most common cancers worldwide and the second most common cause of death after lung cancer. Its incidence is increasing worldwide. Mortality from gastric cancer is higher in developing countries where it is often diagnosed at an advanced stage, hence associated with poor outcome and prognosis post-treatment (1). There are several etiological and risk factors associated with gastric cancer development, mainly H. Pylori infection (1) and other risk factors like pernicious anemia, blood group A, gastric ulcer, familial history, smoking, overweight or obesity and diets rich in highly smoked, or salty food (2). The sequence of events that characterize gastric cancer is progressive from chronic non-atrophic gastritis, intestinal metaplasia, and then dysplasia. Most of the gastric cancers are adenocarcinomas; they occur anywhere in the stomach, the tumor infiltrates the surrounding mucosa, penetrating the wall of the stomach and adjacent organs.

Gastric cancer can be classified pathologically in two ways-the WHO classification as (Adenocarcinoma, Signet ring cancer, and Undifferentiated) (1). As well as the pathological classification by Laurens whereby he classifies into two groups Intestinal and Diffuse type (3). Early gastric cancer has no associated symptoms, however, some patients with incidental complaints are diagnosed with early gastric cancer. Most symptoms of gastric cancer reflect advanced disease, and physical signs often develop in late stages when the disease is too advanced for curative procedures. Signs and symptoms of gastric cancer include indigestion, nausea, and vomiting, dysphagia, postprandial fullness, loss of appetite, melena or pallor from anemia, hematemesis, weight loss, palpably enlarged stomach with succussion splash, enlarged lymph nodes such as Virchow's nodes (supraclavicular) and Irish nodes (anterior axillary). Management of gastric carcinoma is multimodal, and depending on the stage of the disease, can involve surgery, chemotherapy, and radiotherapy or a combination of treatments.

Surgical resection is the principal treatment modality for gastric cancer as it offers a potential cure. It can involve subtotal gastrectomy (partial gastrectomy) or total gastrectomy and the choice of procedure and extent of nodal dissection determine with the ability to attain free margins. Surgery is only a curative modality for localized gastric cancer (stage0-1) above that stage treatment is in form of combination either with chemotherapy or radiation therapy, except in metastatic cases where surgery is not indicated. Adjuvant chemotherapy is standard from stage II diseases and above, and the role of radiotherapy (RT) is largely for palliative purposes. Chemotherapy and radiotherapy can be used as neoadjuvant treatment before surgery and also as an adjuvant to reduce the risk of local recurrences. The application of RT is controversial because of the intrafraction motion of the hollow organ, hence the optimal multidisciplinary approach of management of locally advanced gastric cancer remains undefined, while chemotherapy is mainly used as adjuvant, neoadjuvant and palliation for unresectable tumors. Chemotherapy mainly is used in combination with two or three-drugs, common chemotherapy drugs that are used include Cisplatin/carboplatin, Paclitaxel/Docetaxel, Oxaliplatin, Epirubicin, Irinotecan, 5Fu/Capecitabine (4). Targeted therapy and Immunotherapy also are used as systemic therapy in gastric cancer treatment, due to the presence of HER 2 although the survival was still unsatisfactory, the additional of it in chemotherapy is of beneficial compare to chemotherapy alone (5). Although there are different modalities of treatment still Gastric cancer is a deadly disease and most of the patients being diagnosed with advanced stages of the disease.

METHODOLOGY

The study design was a hospital-based retrospective study. Conducted at Ocean Road Cancer Institute (ORCI). ORCI is a cancer treatment, research, and academic facility in Tanzania, the center became autonomous and was upgraded to a national referral facility for comprehensive cancer services accessible by all Tanzanians and patients from neighboring countries. ORCI offers both inpatient and outpatient services, including chemotherapy, radiation therapy, imaging and laboratory services, palliative care, and cancer screening services. It plays a major role in the country's National Cancer Registry and the National Cancer Control Strategy. It receives patients with a histologically confirmed diagnosis from MNH through tumor board meetings, as well as from other hospitals from within and outside the country. On average, it's estimated that Gastric cancer patients admitted at ORCI is about eleven cases per annum. The majority of gastric cancer patients at ORCI present at an advanced stage.

The study included all patients diagnosed with Gastric cancer who attended any treatment at ORCI from 2013-2017. A total of 150 files was attained by convenience sampling, except those with other gastric conditions and histopathological confirmed nonmalignant tumors. Age, Sex, Residence, Histology, Stages, Clinical Presentation (sign and symptoms), treatment modalities were independent variable anddependent variable was 1-year overall survival which was defined from the first day of attendance at the hospital (ORCI).Data were extracted from the patient's medical records using a data extraction form. This was done by the principal investigator with the help of trained research assistant.

Data from the data extraction sheets which contained raw information's from the field were entered into an excel sheet and eventually transferred to SPSS version 23 for analyses purpose. Descriptive statistics were performed for demographic variables categorized and described using frequency and proportions, and Quantitative variables were summarized by using mean and standard deviation in case of the continuously normal distribution, and Kaplan Meier curves were used to describe survival.

Ethical clearance: Ethical clearance was sought from the Ethical Clearance Board (IRB) of the Muhimbili University of Health and Allied Sciences (MUHAS). The approval to conduct the study was sought from Ocean Road Cancer Institute (ORCI) including the use of medical records for the extraction of the information for the study. Waiver of informed consent was obtained from the ethical committee as records of patients who were analyzed and readily available in the hospital records and patients' identities were not revealed or used in this study.

Study limitations: This was a retrospective study which depended on data collected from patients file and records; some of the information was missing. Efforts to collect missing information included tracing them in the computerized record, from the referral hospital and contacting the patient or relative of the patient, this helped reduce the missing items significantly.

RESULTS

Study population and social demographics characteristic: In this study total of 150 patients were recruited from January 2013 to December 2017 who satisfied the inclusion criteria. Male were 101 (67.3%) and 49 of them were female (32.7%) with male to female ratio of 2.4:1, and the majority of patients came from the coastal region which was about 53% of all patients (Table 1)

Table 1.social-demographic characteristic of the study population n 150

VARIABLE	CATEGORY	N (%)
Age groups(years)	< 40	16 (10.7)
	40-60	75 (50)
	> 60	59 (39.3)
SEX	Male	101 (67.3)
	Female	49 (32.7)
RESIDENCE	Costal	80 (53.3)
	Central	17 (11.3)
	Lake	9 (6.0)
	Northern	37 (24.7)
	Southern	7 (4.7)

Clinical presentation, frequency of occurrence and histological pattern: In this study 95.35% of patients with gastric cancer presented with abdominal pain (epigastric pain) 51.3% had weight loss 35.5% had nausea and vomiting and 25% presented with anemia. Adenocarcinoma was the main histology 98% and SCC was 2%. The majority had an advanced stage, 87.3% were stage III and IV (Table 2)

OVERALL SURVIVAL: Among 150 patients involved in this study 122 patients (81.3%) die before one year and only 28(18.7%) were alive after one year. The stage was the main predictor of survival together with treatment modality, the early stage was highly associated with improvement of

survival, 53.6% of patient with 1-year survival were stage II. Median survival was 4-months, and lower survival rates were related to the advanced stage at diagnosis.

Table 2 clinical presentation, frequency of occurrence and histological pattern N 150

Variable	Category	N (%)
Clinical presentation	abdominal pain	143 (95.3)
	weight loss	77 (51.3)
	nausea and vomiting	53 (35.5)
	Anemia	25 (16.7)
	Other	24 (16)
Stages	I	0 (0)
	II	19 (12.7)
	III	29 (19.3)
	IV	102 (68)
Histology	Adenocarcinoma	147 (98)
	SCC	3 (2)

Figure 2. Overall survival

The above figure shows 1-year overall survival of gastric cancer at ORCI from Jan 2013- Dec 2017 which was 18.7%. According to the table above stage and treatment (chemotherapy& surgery) were statically significant in multivariate analysis.
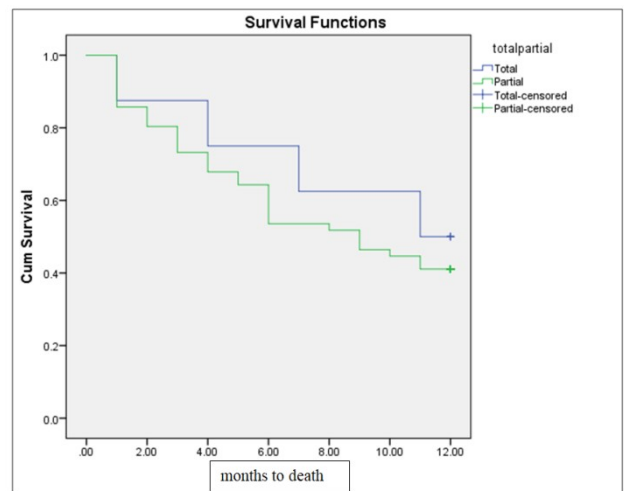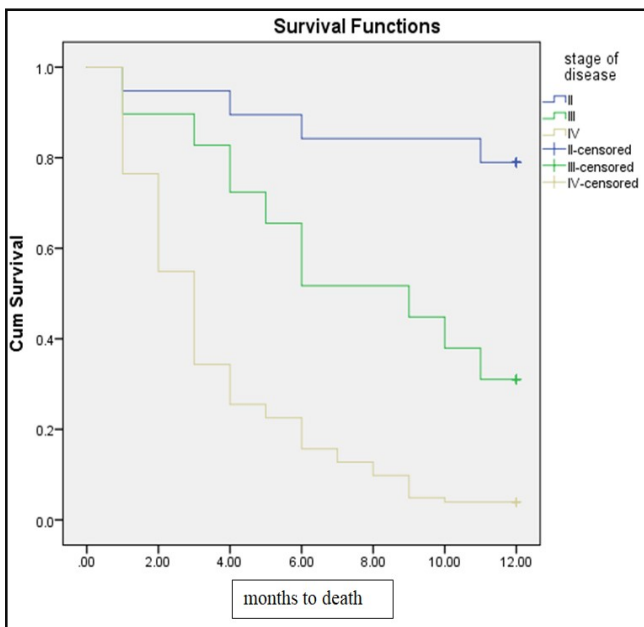
Figure 3. The association between OS and stage N =150

The above figures show that patients who are stage II had higher overall survival compared to those who had stages III &IV with P=0.000.
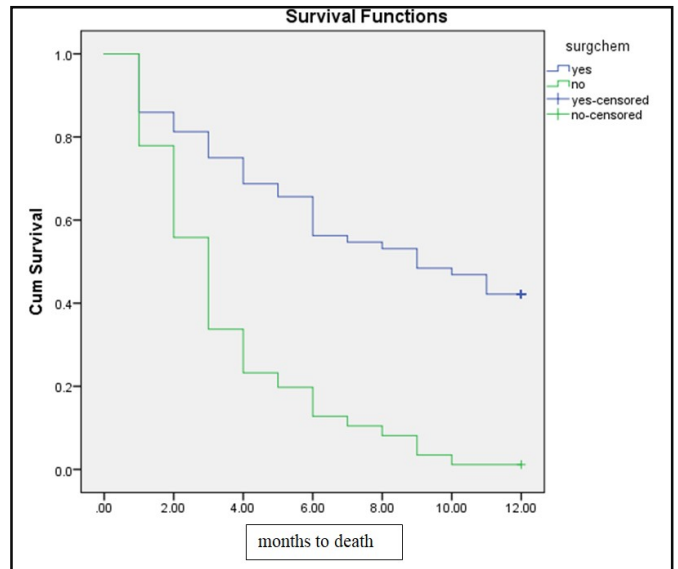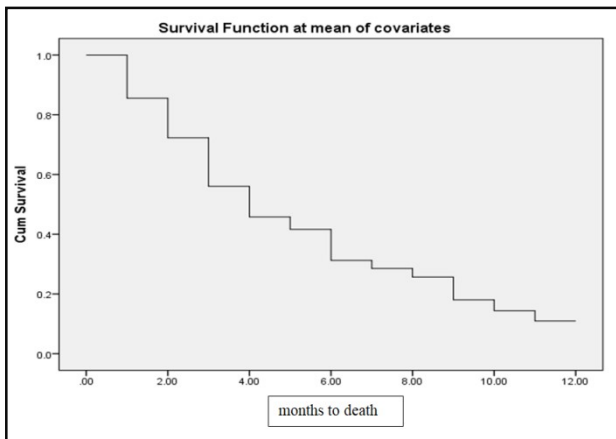

Figure 4. The association between treatment received and OS N=150
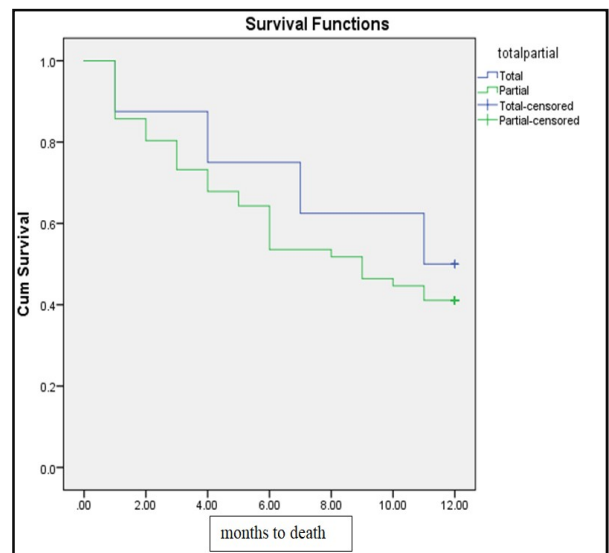

Figure 4 a

Figure 4 b

The figure above shows that patients who were treated with surgery and chemotherapy had a higher survival rate compared to those who received chemotherapy alone with P =0.016. The figure above shows that patients who were treated with Partial gastrectomy had a higher survival rate compared to those who treated with Total gastrectomy with a confidence interval of 1.696 in those who receive partial gastrectomy. The figure above shows that patients who were treated with capecitabine and other chemotherapy regime which had a higher survival rate compared to those who received capecitabine alone with **P =0.000**.

DISCUSSION

In this study a total of 150 patients files were recruited from January 2013 to December 2017, 101 among them were male patients equal to 67.3%, and 49(32.7%) among them were female, with age ranges from 17 to 88 years. Half of the patients, 75(50%) were in the age group of 40-60 and 16 patients (10.7%) were under 40 years and the median age was 57 years. Similar results were previously observed in Tanzania(9) and that conducted in Sub-Saharan Africa (8). However, this was in contrast with a study done in Asia and Latin where the disease was more in 6th and 7th decades of life (6). In this study, the male to female ratio was found to be 2.4:1 this is comparable to studies done elsewhere (8,9,24,25). The trend shows that this dominance of gastric cancer in males is high in regions where men consume alcohol and smoke more than women. This difference is even apparent where the ratio is small in western countries where a greater proportion of the women smokes and consumes alcohol(26) although the role of alcohol and smoking in gastric cancer is still in question (27). The most common clinical presentation in this study is epigastric pain 143(95.3%), weight loss 77(51.3%), nausea and vomiting 53(35.5%), and anemia 25(16.7%). The frequency of occurrence was the same with a difference in percentage with the study done in Morocco 2014 (12,13). Adenocarcinoma was the leading histopathological type, 98% followed by SCC.

This finding is similar in most of the studies (11,13,28) Most of our patients presented with advanced-stage disease, stage III, and IV which is 87.3% of all patients. This result was similar to the study done in the Northern part of Tanzania and Nigeria where results were 92.7% and 94.4% of the participant had stage III and IV disease respectively.(9,29), but differed from a study done in Korea 2018 where most of the patients had early-stage disease (22). Among all patients involved in this study, only 64(42.7%) had undergone surgery of which those who receive surgery, partial gastrectomy has better survival compared to those who had a total gastrectomy, and 86 (57.3%) patients no surgery was done. This might be the possible explanation for poor prognosis since the first-line treatment is surgery and even palliative surgery has a role in survival outcome. (18,30)./ Radiation was not used for any of the patients in this population, but chemotherapy was used for 138(92%) patients involved in the study, while 12 patients received only supportive treatment. The chemotherapy intent for 101 (73.2%) patients was palliation, among them 54 patients were treated with Capecitabinealone of which none of them reach up to one year. A study done in Korea by Hwang *et al* revealed that patients with palliative debulking surgery and systemic chemotherapy had higher survival compared to those who receive palliative systemic chemotherapy alone.

This was a contributive factor of poor prognosis and low survival in our patients since majority received palliative chemotherapy alone (18). Overall survival was assessed by using Cox regression and Kaplan Meir and the group stage was a statically significant association for the survival of the patients. Overall survival was 18.7% which is similar to study done in Mali by Dumbele *et al* whereby 1- year overall survival was 15.5% (34) and the prognosis was as poor as in most of the studies (31–33).

CONCLUSION

The majority of our patients with gastric cancer were diagnosed at an advance stage, Incidence between male and female was 2.4:1, common histopathology was adenocarcinomas whereby common presenting symptoms were abdominal pain, weight loss, nausea, and vomiting. Stage and treatment were the main predictors of survival. The study revealed that gastric cancer has a poor prognosis with a 1-year survival of 18.7%.

Conflicts of Interest: The authors declare no conflicts of interest regarding the publication of this paper.

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