



Gastric Cancer in Kenya

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ABSTRACT

Introduction: Less than a century ago, Gastric cancer was the most common cancer in the world. Despite its worldwide decline over the past century, it remains a major killer across the globe. Information on gastric cancer in developing countries and especially Africa remains low.

Aim: Assess prevalence of gastric cancer among patients presenting with dyspepsia

Methodology: This was a retrospective study to determine the prevalence of gastric cancer among patients with dyspepsia referred for upper GI Endoscopy between June 2014 and June 2016. Source of information was reports made at endoscopy. Patient reports included Age, Gender, reason for referral [presenting symptoms], and findings on oesophagus, OG junction, stomach and Duodenum. Biopsy specimens were taken from any swellings, erosions, erythematous areas, ulcers and any other abnormal looking areas. They were preserved in 10% formal saline and sent for histology. Reports from histology were then linked to the endoscopy reports after reporting.

Data analysis: Data was analyzed using SPSS version 21. The analysis included running of frequency tables [Descriptive statistics] and cross correlations were calculated using Fishers exact chi square test owing to the small sample size.

Results: One thousand two hundred patients underwent OGD over the 2 years. Forty four patients seen over the 2 years had gastric cancer giving a prevalence of 3.67%. Twenty seven of the patients with gastric cancer were males and 17 were females giving female to male ration of 1.1.8. Diffuse gastric cancer was the most common followed by intestinal type. Females tended to get gastric cancer at a younger age than males.

Conclusion: The prevalence of gastric cancer is relatively high. Males are affected more than females. Diffuse gastric cancer is more common like other parts of the world.

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Introduction

Less than a century ago, gastric cancer was perhaps the most common cancer throughout the world. It is now the 4th most common cancer and the second most common cause of cancer related deaths [1-4].

Each year, approximately 990,000 people are diagnosed with gastric cancer worldwide, of whom about 938,000 die from this disease [5]. Gastric cancer also causes one of the highest cancer burdens, as measured by disability-adjusted life years lost [5].

Gastric cancer incidence rates vary widely between men and women and across different countries. In many countries, rates are 2 to 3 times higher in men than women [5]. Gastric cancer incidence rates have been on the decline in many parts of the world except Africa. Gastric cardia cancer has however remained relatively unchanged in Western Countries. This is thought not to be related to [*Helicobacter pylori*] infection, a bacterial infection whose prevalence has declined greatly in developed countries but is still high in developing countries.

The large majority [Approx. 90%] of gastric cancers are adenocarcinomas which arise from the glands of the most superficial layer, the mucosa, of the stomach. There are however, other types of cancer arising from stomach including mucosa associated lymphoid tissue lymphoma which originates from lymphoid tissue of the stomach and

leiomyosarcomas which arise from the muscles that surround the mucosa.

A popular classification by Lauren Stratifies gastric cancer [Adenocarcinoma] into 2 major histological types, diffuse and intestinal [6]. These two types have different appearance histologically, gender ratio, age at diagnosis, epidemiologic patterns and causes. Intestinal type of gastric carcinoma is associated with *H.pylori* associated chronic gastritis, atrophy and intestinal metaplasia which are thought to be precursors of the dysplastic changes that evolve into this type of carcinoma [7].

Gastric carcinomas of the diffuse type are also associated with *H. pylori* infection, but not with atrophy and intestinal metaplasia and are thought to have poor prognosis compared to the intestinal type. Frequencies of the two broad groups of gastric cancer also differ.

Studies done in the past 3 decades support multifactorial aetiology of sporadic gastric cancer and have led to the concept of progressive cascade of phenotypic and molecular changes that may eventually lead to neoplasm: *Helicobacter Pylori* [*H. pylori*] is blamed as a vital aetiological element that initiates the entire process of gastritis both *H. pylori* induced and autoimmune in origin, leading to mucosal damage. *H. pylori* induced gastritis, may lead to intestinal metaplasia which may progressive to intestinal type of cancer. The diffuse type is



usually related to non-atrophic gastritis [8]. Although *H. pylori* is an important aetiologic factor, phenotypic expression depends on *H. pylori* genotype in the stomach, notably cytotoxin associated gene [Cag A] positive strains [9].

Several studies show nutrition contributes significantly to gastric cancer. Many micronutrients including minerals like selenium, antioxidant like carotenoids Vitamins C, and E are protective against gastric cancer. However, heavy smoking in conjunction with alcohol consumption [20 cigarettes/day and more than 5 occasions of heavy alcohol intake in 14 days] increases the risk to non-cardia gastric adenocarcinoma [10]. High salt diet also enhances chemically induced gastric cancer in a dose dependent fashion [11]. Nitrosamines and other nitro compounds have been found to be carcinogenic in animal studies and are also classified as carcinogenic to humans. Meat and fish that are smoked, pickled, and salt preserved have been found to have high levels of nitro compounds. High intake of these foods could lead to gastric non-cardia adenocarcinoma [12]. Obesity with body mass index in excess of 30kg/m² does increase the risk of gastric cardia adenocarcinoma due to acid reflux [13]

Other factors associated with stomach cancer include environmental, genetic, advanced age, male sex, radiation exposure and family history. Risk factors for cancers arising from cardia and non-cardia gastric

regions are different. *H. pylori* is thought to involve mainly the non-cardia gastric cancer.

It has been recognized that there is an upward trend in non-communicable disease, including cancer within developing countries [14] The World Health Organization [WHO] estimates an increase in cancer deaths of 45% between the years 2007 and 2030 [15]. Cancer kills more people than AIDs, tuberculosis and malaria combined yet it has received less focus.

Understanding risk factors, aetiology and management of various types of cancer, and in particular gastric cancer will impact the survival outcomes of those affected by risk or disease. With the increasing westernization of diet in our rapidly growing urban centers, lifestyles are changing and so is the increased risk of cancer of the stomach. [16]

It is therefore prudent to increase research and publications related to cancer in Africa including cancer of the stomach. There is however, a paucity of published data regarding gastric cancer in Africa and the need to elucidate common subtypes and aetiology is urgent.

Aim

Assess the prevalence of gastric cancer among patients presenting with dyspepsia.

Methodology

This was a retrospective study to determine the prevalence of gastric cancer amongst patients with dyspepsia sent for upper gastrointestinal endoscopy



in a busy Gastroenterology Clinic in Nairobi, Kenya. The patients were referrals from almost all parts of Kenya and they all presented with dyspepsia.

Data Collection

Data was extracted from records on reports made after every endoscopy procedure. The information captured included name, age, gender reason for referral, procedure findings from oesophagus, gastroesophageal Junction [OG junction], stomach and duodenum. All findings were recorded on a standard report form. Pictures of any observed lesions were captured and printed. Biopsies were taken from abnormal looking lesions/areas, preserved in 10% formal saline and sent for histology. Histology reporting was done by a consultant Pathologist

Data analysis

Data was analyzed using SPSS version 21. The analysis included running of frequency tables [Descriptive Statistics] and cross correlations were calculated using Fishers exact test owing to the small sample size

Results

Data given below is from a collection of gastric cancer cases seen in a busy Nairobi gastroenterology clinic over the last 2 years. One thousand two hundred [1200] patients underwent Endoscopy [OGD] during the period May 2014 to May 2016. Forty Four [44] patients seen over the 2 years period had gastric cancer confirmed histologically. Twenty seven [27] were male and seventeen [17] were females, giving female to male ratio 1:1.8 The patients sent for OGD in the clinic were referrals from all over the country.

The age range for those with Cancer was 23years to 85 years. Mean age for the 44 cancer patients was 58.3yrs. Mean age for males was 61.8 years and that for females was 53.5 years. Below are tables and diagram to show age distribution by gender, cancer type by histology and distribution by age and gender and comparison in percentages by age and anatomical sites.

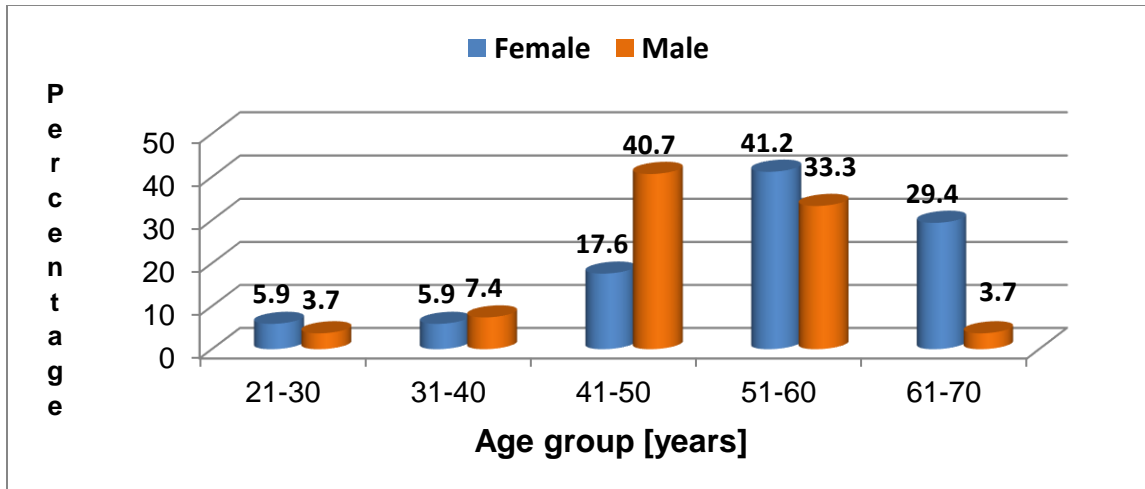


Fig. 1: Age distribution by gender

Majority of patients were aged between 41-70yrs.

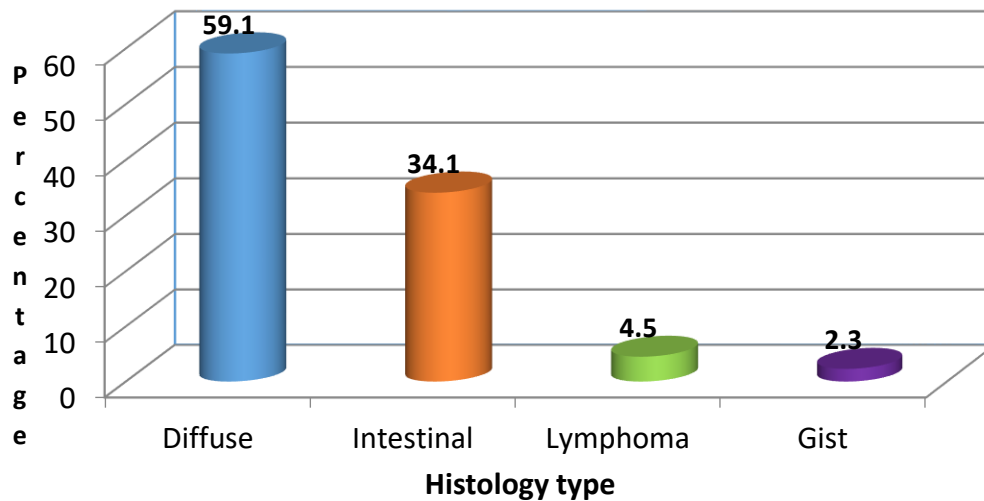


Fig. 2 Histological and types of cancer by percentage

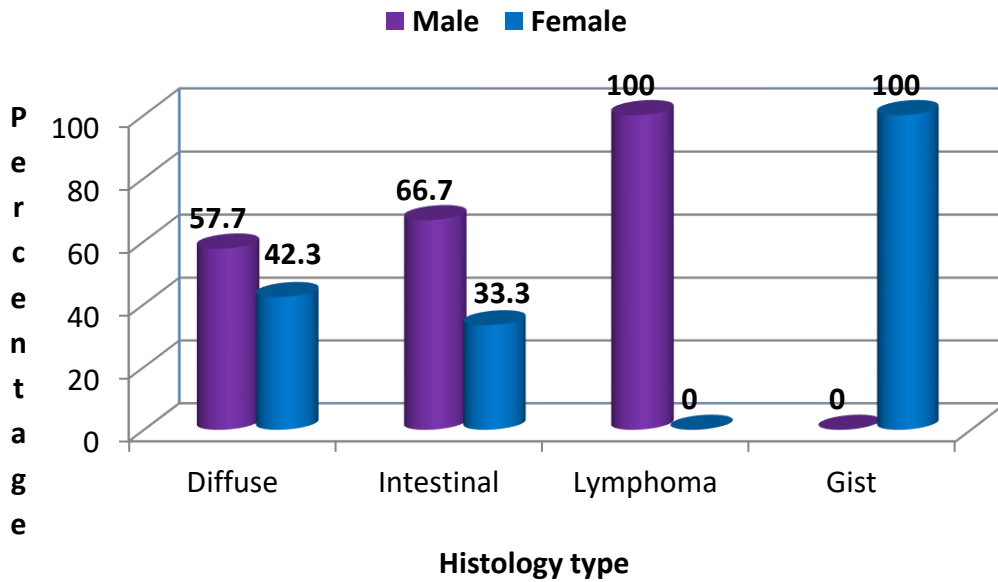


Fig 3: Distribution of cancer by gender and histology type

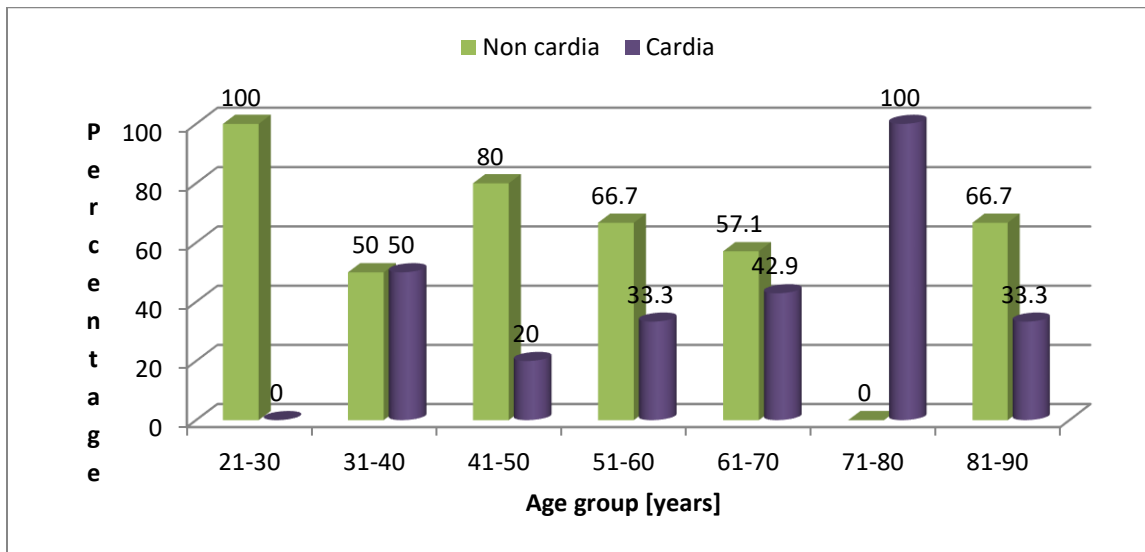


Fig 4: Gastric Cancer [Percentage]: Age Distribution and Anatomical Site.

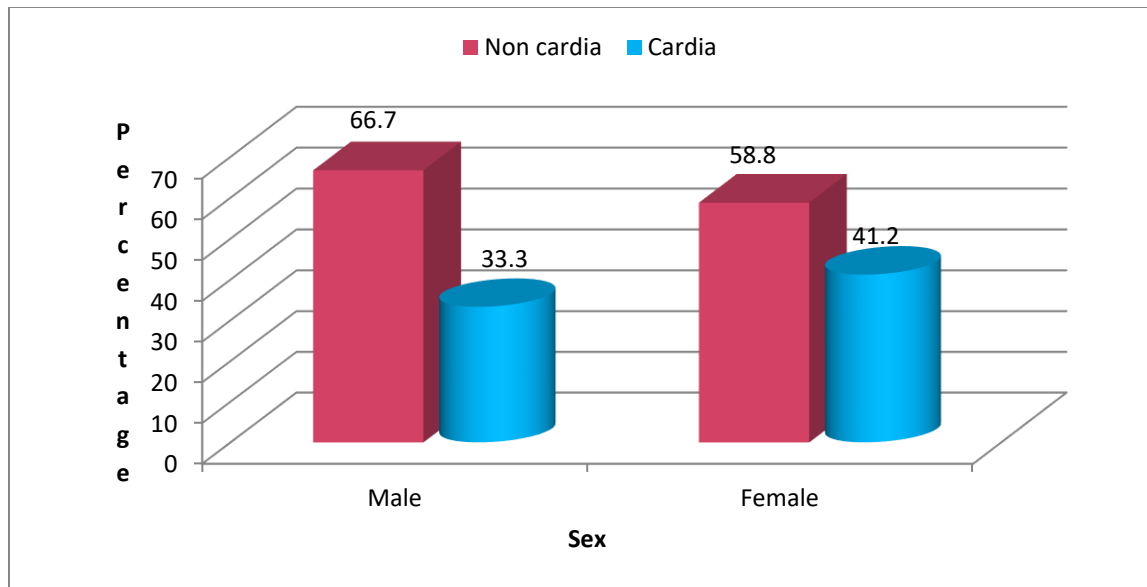


Fig 5: Gastric Cancer distribution [Percentage]: Anatomical site and Gender

Discussions

Our study shows most patients were in the 5th and 6th decades of life. It also shows 59% of the cancer cases were of diffuse type and 34% were of the intestinal type as shown in diagram 2. These figures compare with those published by Polkowski W. and colleagues 54% and 32% respectively. [17]

However, the females appeared to be affected earlier than males as shown in figure 1. Intestinal gastric adenocarcinoma also tended to affect more males [37.3%] than females [29.4%]. Diffuse gastric adenocarcinoma also affected more males than females but the difference was small 55.5% vs 64.7%. This pattern of cancer appears to occur in similar fashion in the United States of America across all races [18] and Scandinavia [19]. Apart from cancer male predominance, the cancer occurrence

peaked in the 51 – 60 year old group males and 41 – 50 years old group in females. The intestinal type of gastric cancer has been on decline while the diffuse type is on the rise [20-24]. Diffuse gastric cancer has a poorer prognosis and affects all age groups much more than intestinal type as shown by our results. Adachi Y and colleagues also show similar findings [22]

Adenocarcinoma of the gastric cardia affected 37% of the patients with almost all patients being 50yrs or older compared to non-cardia cancer patients with distribution of 33% being 50yrs of age or less. However, the ratio between diffuse gastric cancers in the cardia are about equal. These findings tend to agree with other published data from other parts of the World.



Though our sample size is small, we believe this shows important features about cancer of the stomach in our set up. These include male predominance, women are affected earlier than men by about 1 decade and the predominant type is diffuse gastric adenocarcinoma.

It is important to identify the important aetiological factors. Early diagnosis is the key to optimal outcomes in treatment.

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