wjpmr, 2022, 8(11), 33-41

SJIF Impact Factor: 5.922

WORLD JOURNAL OF PHARMACEUTICAL AND MEDICAL RESEARCH

www.wjpmr.com

Research Article

ISSN 2455-3301

WJPMR

GASTROINTESTINAL CANCERS IN NORTHERN GHANA: A HISTOPATHOLOGICAL REVIEW IN THE DEPARTMENT OF PATHOLOGY; TAMALE TEACHING HOSPITAL

Der E. M.*[1,2], Tonsagri I.[3], Naporo S.[4], Ibrahim M. M.[1,2], Gyamfi E. F.[5], Nabo J.[6,8], Owusu A. E.[7,9], Akanbong P.[8], Tabiri S.[9]

[1]Department of Pathology, School of Medicine, University for Development Studies, PO Box TL 1350, Tamale-Ghana.
[2]Department of Pathology, Tamale Teaching Hospital, Tamale-Ghana.
[3]Department of Internal Medicine, Tamale Teaching Hospital, Tamale-Ghana.
[4]Department of Pathology, Greater Accra Regional Hospital; Ridge, Accra – Ghana.
[5]Komfo Anokye Teaching Hospital and Berekum Holy Family Hospital.
[6]Tamale Teaching Hospital and Komfo Anokye Teaching Hospital.
[7]Tamale Teaching Hospital and Croydon Hospital, UK.
[8]Department of Medicine, School of Medicine, University for Development Studies, PO Box TL 1350, Tamale-Ghana.
[9]Department of Surgery, School of Medicine, University for Development Studies, PO Box TL 1350, Tamale-Ghana.

***Corresponding Author: Prof. Der E. M.**

Department of Pathology, School of Medicine, University for Development Studies, PO Box TL 1350, Tamale-Ghana.

Article Received on 13/09/2022 **Article Revised on 03/10/2022** **Article Accepted on 23/10/2022**

ABSTRACT

Published data on GIT cancers in Northern Ghana is scanty. The aim of this review was to document the spectrum and the clinico-pathological characteristics of GIT cancers diagnosed in northern Ghana as a baseline data. **Material and Methods**: This was a histopathological review (n = 238) from 1st January, 2013 to 31st December, 2020. Data were analysed using SPSS software, version 26.0 (Chicago). Fisher's exact test with a significance level of 0.05 was performed using GraphPad Prism software v.6.01. **Results:** The common GIT cancers were: Stomach (49.6%), oesophagus (22.7%), and colorectal (20.6%). The mean ages in years were: stomach (54.4 ±18.3), oesophagus (57.0±19.1) and colorectal (50.8±19.6). Stomach (54.2%; P=0.2413) and colorectal (59.2%; P= 0.3660) cancers were slightly common in males, but oesophagus cancer was commoner in females (53.7%; P=0.1056). The common clinical presentation by sites were: stomach (epigastric pain; 41.5%), oesophagus (dysphagia; 27.8%) and colorectal (altered bowel habits; 36.2%). Invasive adenocarcinoma was the commonest histological subtypes for stomach (88.1%), oesophagus (53.7%), colorectal (79.6%) and the small bowel ((50.0%), however, for the appendix it was GIST (50.0%). The common sites of colorectal malignancies were: recto-sigmoid (51.0%), caecum (22.4%) and ano-rectum (16.2%). A total of 25 (51.0%) resected large specimens had Duke's staging, of which 10 (40.0%) were stage C. **Conclusion**: The common GIT cancers were: gastric, oesophagus, colorectal and the small bowel, and the common clinical symptoms were epigastric pain and dysphagia. Most of these malignancies were relatively common in elderly males, with advanced clinical and histological stages at presentation.

KEYWORDS: GI tract malignancies, TTH, northern Ghana, advanced stage.

INTRODUCTION

The morbidity and mortality resulting from malignancies of the gastrointestinal tract (GIT) are on the rise globally.[1,2,3,4,5] However, the rise is not uniform as there are substantial variations across countries and even within countries depending on the degree of economic development and the associated social and life style changes.[2,3,4,5] Currently cancer is of an emerging public health concern in most developing countries, just like their developed counterparts,[6,7] for its affects all aspects of productivity and the and hence the Gross Domestic Products (GDP) of a country.[6,7]

In Ghana, GIT malignancies equally contribute significantly to cancer related morbidity and mortality as reported previously.[8,9,10] Previous works attributed increasing burden of cancer among Ghanaian to the improvement in life expectancy at birth, rapid population growth and life style changes which hitherto were not common in our country.[1,10,11,12,13,14]

GIT malignancies are generally, diseases of the elderly,[9,15,16,17] but the clinical presentations vary among studies and populations. These diseases are commonly diagnosed in males, compared to their female.[9,18]

Malignancies of the gastrointestinal tract (GIT) have been reported in previous publications from southern Ghana as common causes of cancer related morbidity and mortality. The Department of Pathology of the Tamale Teaching Hospital (TTH) and the University for Development Studies – School of Medicine (UDS-SoM) serves the northern sector of Ghana and beyond. In view of this, it is very important to have base-line documentation of the various cancers of the GIT, for further research in the future. The aim of this review was to document the spectrum and the clinico-pathological characteristics of GIT cancers diagnosed in the Department of Pathology of the TTH/UDS as a baseline data for future research.

MATERIAL AND METHODS

Gastrointestinal tract malignancies in this study include that of the oesophagus, stomach, small bowel, the colorectal, anus and the appendix.

***Study design and site*:** This was a retrospective study that evaluated 1,116 GIT diseases reports from the Department of Pathology of the Tamale Teaching Hospital (TTH) and the School of Medicine of the University for Development Studies (SoM-UDS) from 1st January, 2013 to 31st December, 2020. TTH is the largest referral hospital in northern Ghana.

Data collection: All histopathological request forms and the histology reports on GIT diseases reported previously in our institution, from 1st January, 2013 to 31st December, 2020 were retrieved and reviewed by the pathologist. Where necessary, the corresponding histology slides and or new slides from the paraffin embedded blocks were reviewed alongside.

There 1,116 GIT diseases diagnosed during the period of review and this dropped to 1095 after data cleaning. These were grouped into: 1) Inflammatory lesions 807 (73.70%), 2) Benign neoplastic lesions 49 (4.6%), 3) Malignant lesions (cancers) 238 (21.7%).

Patients diagnosed with the malignant lesions 238 (21.7%), constituted the study population. Data were collected on the demographic 9age and sex) and the clinico-pathological features (symptoms, duration, histological subtypes, grades and Duke's stage) on this group of patients.

***Data analysis*:** Data were entered into a statistical data base and analysed using SPSS software version 26.0 (SPSS Inc., Chicago, Ill). Categorical and non-categorical variables were analysed and the results presented in frequency tables and a bar chart. Fisher's exact test with a statistical significance level of 0.05 was performed using GraphPad Prism software v.6.01.

INCLUSION CRITERIA

1. All histologically confirmed GIT malignancies during the period of study were included.
2. Secondary tumours to any part of the GIT were included.

EXCLUSION CRITERIA

1. All poorly fixed specimens and those with incomplete records (no histological diagnosis, no site and no anatomical sites) were excluded.
2. All resected samples: gastrectomy and hemicolectomy that had prior diagnosis from an endoscopic biopsy were excluded to prevent double entry.

RESULTS

The common GIT cancers by site in descending order were: Stomach 118 (49.6%), oesophagus 54 (22.7%), and colorectal 49 (20.6%) **(Figure 1).**

The ages of patients (n= 238) diagnosed with GIT malignancies ranged from 3 – 94 years with a mean of 54.4 ±18.3 years. Many of the patients were aged 70.0years and above 62 (26.5%) **(Table 1).** There were 128 (54.0%) males compared to 110 females (46.0%), P= 0.1190). The great majority 201 (84.5%) of the cases had no stated duration of illness at presentation, compared to 37 (15.5%) with stated duration (P<0.0001).

The ages of the patients (n = 118) diagnosed with gastric malignancies ranged from 16 – 94 years with a mean age of 55.7±17.5 years, approximately, 27.1% were aged 70 years and above **(Table 2)**. A little above half (54.2%) were males (P= 0.2413). The commonest clinical symptom at presentation was epigastric pain (41.5%). The great majority 107 (90.7%) had no stated duration of their symptoms at presentation (P<0.0001). Gastric malignancies were commonly diagnosed in small endoscopic biopsy specimens 106 (89.8%; P<0.0001 **(Table 3, figure 2).** Conventional invasive adenocarcinoma was the commonest 104 (88.1%) histological subtype (p<0.0001). There were 86 (82.75) intestinal compared to 18 (17.3%) diffuse variants (P<0.0001). **(Table 3).**

A total of 54 (22.7%) of the study sample had histologically confirmed malignant lesions arising from the oesophagus. Their ages ranged from 18 – 83 years with a mean age of 57.0±19.1 years, 35.2% were aged 70 years or more **(Table 2).** The youngest patient had previous history of corrosive ingestion during childhood. A little above half (53.7%) were females (P= 0.5639). The commonest symptom of oesophageal malignancies was dysphagia (27.8%). The lesions were commonly diagnosed in small endoscopic samples (87.0%, P<0.0001) **(Table 4).** Invasive adenocarcinoma was commonest histological subtype of oesophageal malignancy (53.7%). Many of the cancers were well differentiated (48.2%) **(Table 4).**

The ages of the 49 (20.6%) patients with malignancies of the colorectal region ranged from 3 – 87 years, with a mean age of 50.8±19.6. There were 29 (59.2%) males.

The commonest clinical presentation was altered bowel habits (36.7%). Colorectal cancers were commonly diagnosed in endoscopic biopsy specimens (49.0%) **(Table 5).**

The common sites of colorectal malignancies were: recto-sigmoid (51.0%), caecum (22.4%) and ano-rectum (16.2%) **(Table 5).**

Conventional invasive adenocarcinoma was the commonest (79.6%) histological subtype (p<0.0001). Majority 24 (61.5%) were well differentiated adenocarcinomas. A total of 25 (51.0%) resected large specimens had Duke's staging, of which 10 (40.0%) were stage C.

There were 8 (3.7%) histologically confirmed malignancies from the small bowel, with equal sex distribution and all presented with intestinal obstruction **(Table 6).** The common histological subtypes were: adenocarcinoma 4 (50.0%) and Non-Hodgkins lymphoma 2(25.0%) **(Table 6).**

Cancers of appendix were commonly diagnosed in younger age groups with a mean age of 42.5±11.6 years **(Table 2).** The great majority 5 (83.3%) of the appendiceal cancers were diagnosed in males compared to females (16.7%) (P<0.0001) **(Table 7).** The histological subtypes were: GIST 3 (50.0%), Non-Hodgkin's lymphoma 2 (33.3%) and neuroendocrine carcinoma 1(16.7%) **(Table 7).**

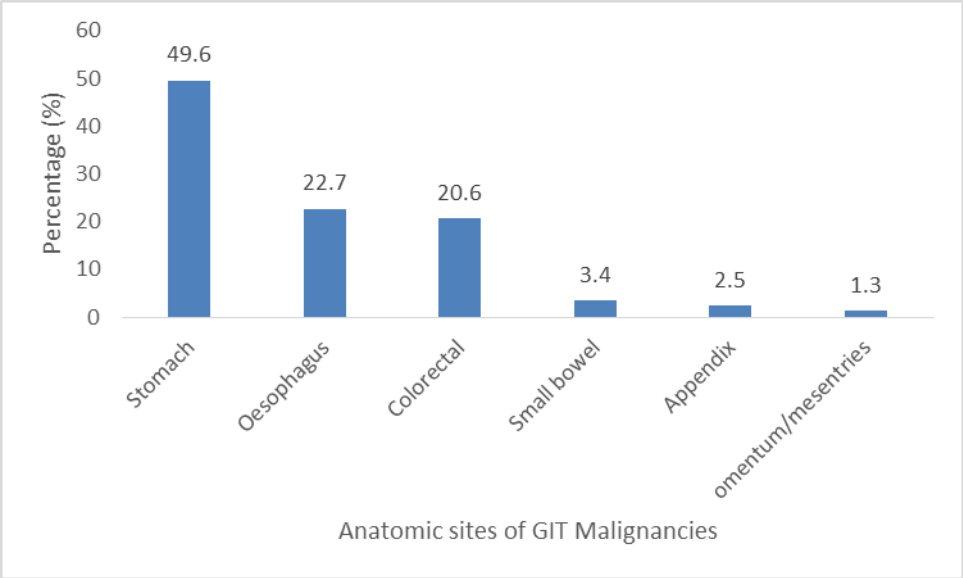

Figure 1: Categories of GIT malignancies in northern Ghana by anatomic location.

Table 1: Age characteristics of patient diagnosed with gastrointestinal lesions at the Tamale Teaching Hospital (1st January, 2013 to 31st December, 2020), n = 238.

Age group (Years)	Frequency (n)	Percentage (%)
≤9	1	0.4
10 - 19	6	2.5
20 - 29	14	6.0
30 - 39	30	12.6
40 - 49	47	19.7
50 - 59	37	15.5
60 - 69	40	16.8
≥70	63	26.5
Total	**238**	**100.0**

Table 2: The age distributions of GIT cancers at the Tamale Teaching Hospital (1st January, 2013 – 30st December, 2020)

Age group (years)	Gastric n/%	Oesophagus n/%	CRC n/%	Small bowel n/%	Appendix n/%	Omentum n/%	Total n/%
≤9	0(0.0)	0(0.0)	1(2.0)	0(0.0)	0(0.0)	0(0.0)	1(0.4)
10-19	2(1.7)	1(1.9)	3(6.1)	0(0.0)	0(0.0)	0(0.0)	6(2.5)
20- 29	6(5.1)	5(9.3)	3(6.1)	0(0.0)	0(0.0)	0(0.0)	14(5.9)
30- 39	14(11.9)	4(7.4)	7(14.3)	1(12.5)	2(33.3)	2(66.7)	30(12.6)
40- 49	24(20.3)	10(18.5)	9(18.4)	2(25.0)	2(33.3)	0(0.0)	47(19.7)
50- 59	16(13.7)	8(14.5)	9(18.4)	2(25.0)	1(16.7)	1(33.3)	37(15.5)
60- 69	24(20.6)	7(13.0)	7(14.3)	1(12.5)	1(16.7)	0(0.0)	40(16.8)
≥70	32(27.1)	19(35.2)	10(20.4)	2(25.0)	0(0.0)	0(0.0)	62(26.1)
Total	118(100.0)	54(100.0)	49(100.0)	8(100.0)	6(100.0)	3(100.0)	238(9.5)
Mean age	55.7±17.5	57.0±19.1	50.7±196	55.4±17.5	42.5±1.16	42.0±12.2	
Categorization of the age into:							
≤49	46(39.0)	18(33.3)	23(46.9)	3(37.5)	4(66.7)	3(66.7)	62(30.2)
≥50	52(61.0)	36(66.7)	26(53.1)	5(62.5)	2(33.3)	1(33.3)	117(69.8)
P-values	0.4751	0.0010	0.6864	0.6193	0.5671	0.4857	-

KEY: CRC= Colorectal cancer

Table 3: Clinico-pathological features of patients diagnosed with gastric cancers at the Tamale Teaching Hospital.

Gastric malignancies	Frequency (n)	Percentage (%)	P-Values
Gender			0.2413
Male	64	54.2	
Female	54	45.8	
Symptoms			<0.0001
Epigastric pain	49	41.5	
GOO &vomiting	21	18.0	
Abdominal pain &vomiting	19	16.1	
Abdominal pain	5	4.2	
Abdominal masses	7	5.9	
Dysphagia	9	7.6	
Bleeding per rectum Upper GIT bleeding	5 3	4.2 2.5	
Type of surgical specimen			<0.0001
Upper GI endoscopic	106	89.8	
Laparotomy and biopsy	12	10.2	
Histological subtype of stomach cancer			
Conventional adenocarcinoma GIST	104 4	88.1 3.5	<0.0001
Non-Hodgkin's lymphoma	3	2.5	
Squamous cell carcinoma	6	5.1	
Neuroendocrine	1	0.8	
Histological grade of adenocarcinoma (n=104)			<0.0001
Well differentiated	42	40.4	
Moderate differentiated	28	26.9	
Poor differentiated	34	32.7	

KEY: GOO= Gastric outlet obstruction, GIST= Gastrointestinal stroma tumour

Table 4: Clinico-pathological features of patients diagnosed with cancer of the oesophagus at the Tamale Teaching Hospital.

	Frequency (n)	Percentage (%)	P-values
Gender (n=54)			0.5639
Female	29	53.7	
Male	25	46.3	
Symptoms at presentation (n=54)			0.0026
Dysphagia	15	27.8	
Epigastric pain	14	25.9	
Vomiting	11	20.4	
Bleeding per rectum	5	9.3	
Abdominal pain &vomiting	4	7.4	
Constipation	3	5.6	
Upper GIT bleeding	1	1.9	
Abdominal pain	1	1.9	
Types of surgical specimen (n=54)			<0.0001
Endoscopic biopsy	47	87.0	
Resected tissue	7	13.0	
Histological subtype (n=54)			0.5639
Squamous cell carcinoma	25	46.3	
Adenocarcinoma	29	53.7	
Histological grade (n=54)			<0.0001
Well differentiated	26	48.2	
Moderately differentiated	18	33.3	
Poorly differentiated	10	18.5	

Table 5: Clinico-pathological features of patients diagnosed with colorectal cancers at the Tamale Teaching Hospital.

	Frequency (n)	Percentage (%)	p-values
Gender			0.1056
Female	20	40.8	
Male	29	59.2	
Symptoms at presentation			0.2253
Altered bowel habits	18	36.7	
Abdominal mass	10	20.4	
Abdominal pain	5	10.2	
Lower GIT bleeding	5	10.2	
Dysphagia	5	10.2	
Epigastric pain	3	6.1	
Abdominal pain with vomiting	3	6.1	
Type of surgical specimen			1.0000
Endoscopic biopsy	24	49.0	
Left hemicolectomy	11	22.5	
Right hemicolectomy	6	12.2	
Laparotomy and resection	8	16.3	
Anatomic site of CRC			
Recto-sigmoid	25	51.0	
Caecum	11	22.4	
Ano-rectum	5	16.2	0.0011
Ascending colon	3	6.1	
Transverse colon	2	4,1	
Descending colon	3	6.1	
Histological subtype			<0.0001
Conventional adenocarcinoma	39	79.6	
Neuroendocrine carcinoma	3	8.2	
Squamous cell carcinoma	3	6.1	
Lymphoma	1	2.0	

GIST Malignant mesothelioma	1 1	2.0 2.0	
Histological grade (n=39)			<0.0001
Well differentiated	24	61.5	
Moderately differentiated	10	25.7	
Poorly differentiated	5	12.8	
Duke's staging of CRC (n=25)			0.2578
B1	6	24.0	
B2	9	36.0	
C	10	40.0	

Table 6: Clinico-pathological features of patients diagnosed with small bowel cancers at the Tamale Teaching Hospital.

	Frequency (n)	Percentage (%)	P-values
Gender			1.0000
Male	4	50.0	
Female	4	50.0	
Symptoms at presentation			1.0000
Intestinal obstruction	4	50.0	
Abdominal mass	2	25.0	
Abdominal pain and vomiting	2	25.0	
Surgical specimen			
Resected bowel	8	100.0	
Histological subtype			1.0000
Adenocarcinoma	4	50.0	
NHL	2	25.0	
GIST	1	12.5	
Neuroendocrine carcinoma	1	12.5	

Table 7: Clinico-pathological features of patients diagnosed with cancer of the appendix at the Tamale Teaching Hospital.

Appendix (n=6)	Frequency (n)	Percentage (%)	P-values
Gender			<0.0001
Male	5	83.3	
Female	1	16.7	
Symptoms at presentation			0.5671
Abdominal mass	4	66.6	
Intestinal obstruction	1	167	
Abdominal pain, fever and vomiting	1	16.7	
Surgical specimen			
Laparotomy and resection	6	100.0	
Histological subtype			1.0000
GIST	3	50.0	
NHL	2	33.3	
Neuroendocrine carcinoma	1	16.7	

DISCUSSION

The department of pathology serves the entire northern part of Ghana and beyond. Base-line documenting of the various gastrointestinal (GIT) cancers for future research is very important. This paper, the first of its kind, is based on the initial available data on cancers that affects the GIT: oesophagus, stomach, small bowel, colorectal, anus and the appendix; diagnosed in the department of pathology from 1st January, 2013 to 31st December, 2020.

Cancer of the gastrointestinal were reported in West Africa decades ago by Edington et al.[8] Following this publication, there have been reports on GIT cancers from the southern part of Ghana.[13,14] The current study conducted in northern Ghana, found the relative proportion GIT cancers be 21.7% of all GIT samples received in the department of Pathology covering the period of study were malignant. The great majority, (97.3%) of these cancers were primary in origin. GIT cancers in this study were reported to be common in relatively young individuals with mean age of 54.2±17.9

years, with only 26.5% been diagnosed in patient aged 70-years and above. Primary malignancies of the GIT has been found to a disease of the elderly,[15,16,17] quite different from that in this current study. The reason for this disparity may be due to the differences in life expectancy between the developed and developing country such as Ghana. However, the age characteristics of the population in the in-depth study are similar to a previous study conducted at the Korle-Bu teaching in Accra, Ghana, by Der et al.,[9] who reported a mean age of 55.5 years. The similarity between the current study in the northern part of Ghana and the previous report from the southern part may be due to the fact the two areas shared similar population characteristics. A little above half were males and this corroborates with studies that found GIT malignancies to be commoner in males.[9,17,18]

The common GIT malignancies by location in this current study were: gastric (49.6%), oesophagus (22.7%) and colorectal (20.6%). This pattern departs from results of previous studies that reported the order as: colorectal, stomach, and oesophagus.[9,18,19]

Patients diagnosed with gastric cancers were relatively older (mean age of 55.7±17.7 years), compared to those from the order anatomical sites and that 60.7% were aged 50-years and more (P<0.0001). Again, there was a slight male dominance (P= 0.0740). The age and gender characteristics of patients with cancer of the stomach in this study are similar to reports of previous studies which found disease to commonly affect elderly males.[9,20,21,22] For instance, Der et al.,[9] in their study in Accra; Ghana reported a mean age of 58.3 years, and that the greater proportion were over 50-years, with male predominance. The most likely explanation may be that males commonly both abuse alcohol and tobacco, compared to their female counterparts in the area of the current study. The common clinical presentation of gastric cancer were epigastric pain (41.5%), persistent vomiting (18.0%) and abdominal pain (16.1%). This support previous studies in Ghana and beyond years ago.[9,23,24] Invasive adenocarcinoma was the commonest (88.1%) histological type (p<0.0001), with 82.7% intestinal and 17.3% diffuse variants (P<0.0001), respectively. The histological characteristics of gastric cancers in the current study are in accordance with findings of previous studies in Ghana and beyond.[9,23,24]

In this current study, the mean age of patients with cancer of the oesophagus was 57.0±19.1 years, with 35.2% aged 70 years and above. The age characteristics as found in this study seem to suggest that patients with oesophageal cancer are relatively older compared to those with colorectal and stomach cancers. The advanced age at diagnosis with oesophageal cancers in the current study is in accordance with published previous data in Ghana[9,27] and other parts of the globe.[28,29] One important finding in this baseline study is the act that oesophageal cancers were found to be commoner (53.7%) in females. This differs from studies that found cancer of the oesophagus to be associated with the male gender.[9, 28, 29] For instance, Der et al.,[9] study in Ghana found 68.1% of their study population to be males. The gender characteristics of oesophageal cancer observed in this current is therefore unusual, knowing that these cancers are male predominant due to association of this male gender with identifiable high risk factors (cigarette smoking and alcohol abuse) for cancer of the oesophagus. The study found that patients with cancer of the oesophagus commonly present with dysphagia and that all the malignancies were diagnosed in endoscopic biopsy specimens. This is similar to those of previous studies in Ghana.[9,27] Another significant finding in this current study is that, invasive adenocarcinoma was found to be the commonest histological subtype of oesophageal cancer. These findings depart completely from previous published report across the globe with invasive squamous cell carcinoma as the commonest histological subtype.[30,31] It is difficult to explain this pattern, because of the limited data size and the fact that this is retrospective study.

Colorectal cancers were diagnosed in very young patients, (mean age of 50.7±196 years), with 46.9% aged below 50-years. Further epidemiological and genetics studies are required to identify the possible risk factors, responsible the occurrence of colorectal cancer in younger age group in this part of the country. The age characteristics of patients diagnosed with colorectal cancer however, differ from studies that reported the disease to be common in the elderly.[32,33] Approximately, 60.0% of the patients diagnosed with colorectal cancer were males, similar to the findings of some previous studies.[34,35] This however, differs from two previous studies in Accra; Ghana which reported the disease to be common among females.[9,36] In this study, patients with colorectal cancer commonly presented with altered bowel habits (including constipation) and abdominal masses, both indicative of clinically advanced disease. This calls for regular screening of the at risk population via occult stool testing and or flexible colonoscopy for early detection and treatment of pre-malignant lesions. The clinical presentation of colorectal cancer in this current study is thus in keeping with previous studies in Ghana and beyond.[36,37,38] Colorectal cancers were commonly diagnosed in small endoscopic biopsies similar to Der et al.,[32] study in Accra Ghana. The common sites of colorectal malignancies were: recto-sigmoid (51.0%), caecum (22.4%) and ano-rectum (16.2%). Similar to reports from earlier studies (9, 32, 37, 39,40). Conventional invasive adenocarcinoma was the commonest (79.6%; P<0.0001) histological subtype (p<0.0001). Of the 39 large resected specimens that had histological grading, 61.5% being well-differentiated. The histological characteristics of colorectal cancer the current study are similar to the findings in other studies.[9,39,40] The pathological stage of colorectal cancer assessed by macroscopic and microscopic histopathological examination of the resected colon is the most important prognostic factor and that, the higher the

stage, the poorer the expected outcome.[40] In the current study, a total of 25 cases had Duke's staging, of which many (40.0%) were stage C, and could potentially be described as belonging to a poor prognostic group category.

There were very few (8) small bowel cancers reported in this the study and these were: adenocarcinoma (50.0%), Non-Hodgkin's lymphoma (25.0%), GIST (12.5%), and neuroendocrine carcinoma (12.5%). This spectrum differs from other studies that reported Non-Hodgkin's lymphoma as the commonest histological subtype of small bowel malignancies.[9,34,41]

The common cancers of appendiceal origin identified in the current study were: GIST (50.0%), Non-Hodgkin's lymphoma (33.3%) and neuroendocrine carcinoma (16.7%). Neuroendocrine carcinoma has been reported in the published literature as the commonest malignant tumour of appendiceal origin,[42,43,44] and this is not supported by findings from the current study in northern Ghana.

CONCLUSION

The common GIT malignancies by site in this review were: gastric, oesophagus, colorectal and the small bowel. The common clinical symptoms were epigastric pain and dysphagia. These malignancies were relatively common in elderly males, with advanced clinical and histological stages at presentation.

Recommendation

There is the need for screening programmes to detect premalignant lesions for prompt cure.

CONFLICT OF INTEREST

There is no conflict of interest.

CONSENT TO PUBLISH THIS CASE REPORT

Consent was obtained from the head of department of pathology of the Tamale Teaching Hospital.

FUNDING

The authors received no funding for the work.

AUTHOR'S CONTRIBUTIONS

EDM conceptualized the idea. EDM, TI, NS and IMM retrieved and reviewed the cases. GEF, NJ, OAE, KP and TS provided clinical information. EDM analysed and drafted the manuscript. All the co-authors read through and approved the manuscript for publication.

ACKNOWLEDGEMENTS

The author expresses their profound gratitude to all the staff of the department of Pathology of the Tamale Teaching Hospital for their support during data gathering and retrieval of histology reports and slides.

REFERENCES

1. Ferlay J, Autier P, Boniol M, Heanue M, Colombet M, et al. Estimates of the cancer incidence and mortality in Europe in 2006. Ann Oncol, 2007; 18(3): 581–592.
2. Cresanta JL. Epidemiology of cancer in the United States. Prim Care, 1992; 19(3): 419–441.
3. Boyle P. Cancer, cigarette smoking and premature death in Europe: a review including the Recommendations of European Cancer Experts Consensus Meeting, Helsinki, October 1996. Lung Cancer, 1997; 17(1): 1–60.
4. Dobrossy L. Cancer mortality in central-eastern Europe: facts behind the figures. Lancet Oncol, 2002; 3: 374–381.
5. Bray F, Ferlay J, Soerjomataram Siegel LR, Torre AL, Jemal A: A Cancer Journal for Clinicians Global Cancer Statistics 2018: GLOBOCAN Estimates of Incidence and Mortality Worldwide for 36 Cancers in 185 Countries. CANCER J CLIN, 2018; 68: 394–424.
6. National cancer institute: Cancer statistics [Updated March, 2016]. Available from: http://www.cancer.gov/about-cancer/uuderstanding/statistics.
7. Brown ML, Lipscomb J, Snyder C. The burden of illness of cancer: economic cost and quality of life. Annu Rev publ Health, 2001; 22: 91-113.
8. Edington GM, Easmon CO. Incidence of cancer of the alimentary tract in Accra, Ghana, and Ibadan, Western, Nigeria. Natl Cancer Inst Monogr, 1967 Jul; 25: 17-27.
9. Der EM, Naaeder SB, Clegg-Lamptey JNA, Dakubo JCB, Edusei L, Tettey Y, Gyasi RK. Anatomic categorization of gastrointestinal malignancies using haematoxylin and eosin stains: A 10-year retrospective histopathological study at the Korle-Bu Teaching Hospital Accra. J Cancer Res Ther., 2015; 3(1): 8-14. doi:10.14312/2052-4994.2015-1
10. Wiredu EK, Armah HB. Cancer mortality patterns in Ghana: a 10-year review of autopsies and hospital mortality. BMC Public Health, 2006; 6: 159.
11. Ghana Statistical Service. 2000 population and housing census; Greater Accra Region. Analysis of District Data and Implications for planning. Accra. Statistical Service Accra, Ghana, 2005; 10.
12. Ghana Statistical Service. 2010 population and housing census; Greater Accra Region. Analysis of District Data and Implications for planning. Accra. Statistical Service Accra, Ghana.
13. Biritwum RB, Gyapong J, Mensah G. The Epidemiology of Obesity in Ghana. Ghana Med J., 2005; 39: 82–85.
14. Amoah AGB. Sociodemographic variations in obesity among Ghanaian adults. Public Health Nutr., 2003b; 6: 751-775.
15. Wallach CB, Kurtz RC. Gastrointestinal cancer in the elderly. Gastroenterol Clin North Am., 1990; 19(2): 419–432.

16. Sial SH, Catalano MF. Gastrointestinal tract cancer in the elderly. Gastroenterol Clin North Am., 2001; 30(2): 565–590.
17. Enzinger PC, Mayer RJ. Gastrointestinal cancer in older patients. Semin Oncol, 2004; 31(2): 206–219.
18. 18 Pourhoseingholi MA, Vahedi M, Moghimi-Dehkordi B, Pourhoseingholi A, Ghafarnejad F, et al. Burden of hospitalization for gastrointestinal tract cancer patients - Results from a cross-sectional study in Tehran. Asian Pac J Cancer Prev., 2009; 10(1): 107–110.
19. Goldthorn JF, Canizaro PC. Gastrointestinal malignancies in infancy, childhood, and adolescence. Surg Clin North Am., 1986; 66(4): 845–861.
20. Dupont JB Jr, Lee JR, Burton GR, Cohn I Jr. Adenocarcinoma of the stomach: review of 1,497 cases. Cancer, 1978; 41(3): 941–947.
21. Jemal A, Bray F, Center MM, Ferlay J, Ward E, et al. Global cancer statistics. CA Cancer J Clin., 2011; 61(2): 69–90.
22. Rutegård M, Shore R, Lu Y, Lagergren P, Lindblad M. Sex differences in the incidence of gastrointestinal adenocarcinoma in Sweden 1970-2006. Eur J Cancer, 2010; 46(6): 1093–1100.
23. Lauren P. The Two Histological Main Types of Gastric Carcinoma: Diffuse and So-Called Intestinal-Type Carcinoma. An Attempt at a Histo-Clinical Classification. Acta Pathol Microbiol Scand, 1965; 64: 31–49.
24. Baako BN, Darko R. Incidence of Helicobacter pylori infection in Ghanaian patients with dyspeptic symptoms referred for upper gastrointestinal endoscopy. West Afr J Med., 1996; 15(4): 223–227.
25. Serlin O, Keehn RJ, Higgins GA Jr, Harrower HW, Mendeloff GL. Factors related to survival following resection for gastric carcinoma: analysis of 903 cases. Cancer, 1977; 40(3): 1318–1329.
26. Wang LS, Wu CW, Hsieh MJ, Fahn HJ, Huang MH, et al. Lymph node metastasis in patients with adenocarcinoma of gastric cardia. Cancer, 1993; 71(6): 1948–1953.
27. Tettey M, Edwin F, Aniteye E, Sereboe L, Tamatey M, et al. The changing epidemiology of esophageal cancer in sub-Saharan Africa - the case of Ghana. Pan Afr Med J., 2012; 13: 6.
28. Mannell A, Murray W. Oesophageal cancer in South Africa. A review of 1926 cases. Cancer, 1989; 64(12): 2604–2608.
29. Rutegård M, Shore R, Lu Y, Lagergren P, Lindblad M. Sex differences in the incidence of gastrointestinal adenocarcinoma in Sweden 1970-2006. Eur J Cancer, 2010; 46(6): 1093–1100.
30. Wang HH, Antonioli DA, Goldman H. Comparative features of esophageal and gastric adenocarcinomas: recent changes in type and frequency. Hum Pathol, 1986; 17(5): 482–487.
31. Jemal A, Bray F, Center MM, Ferlay J, Ward E, et al. Global cancer statistics. CA Cancer J Clin., 2011; 61(2): 69–90.
32. Der, E.M.; Gyasi, R.K. The trend of colorectal cancers at Korle-Bu Teaching Hospital: A retrospective histopathological study. Journal of Cancer and Tumor International, 2016; 4: 1-8.
33. Canadian Cancer Statistics 2015–Canadian Cancer Society, Statistics Canada, Provincial /Territorial Cancer Registries, Public Health Agency of Canada.
34. Murphy G, Devesa SS, Cross AJ, Inskip PD, McGlynn KA, Cook MB. Sex disparities in colorectal cancer incidence by anatomic subsite, race and age. Int J Cancer, 2011; 28: 1668–1675.
35. Mohamad AP, Mohsen V, Bijan MD, Asma P, Fatemeh G, Elham M, et al. Burden of hospitalization for gastrointestinal tract cancer patients - results from a crosssectional study in Tehran. Journal: Asian Pacific J Cancer Prev., 2009; 10: 107-110.
36. Naaeder SB, Archampong EQ. Cancer of the colon and rectum in Ghana: A 5-year prospective study. Br J Surg., 1994; 81: 456–459.
37. Dakubo JCB, Naaeder SB, Tettey Y, Gyasi RK. Colorectal carcinoma: An pupdate of current trends in Accra. West Afr J Med, 2010; 29: 178-183.
38. Ratto C, Sofo L, Ippoliti M, Merico M, Doglietto GB, Crucitti F. Prognostic factors in colorectal cancer. Literature review for clinical application. Dis Colon Rectum, 1998; 41: 1033–1049.
39. Stewart SL, Wike JM, Kato I, Lewis DR, Michaud F. A population-based study of colorectal cancer histology in the United States, 1998-2001. Cancer, 2006; 107: 1128–1141.
40. Steinberg SM, Barwick KW, Stablein DM. Importance of tumor pathology and morphology in patients with surgically resected colon cancer. Findings from the Gastrointestinal Tumor Study Group. Cancer, 1986; 58(6): 1340–1345.
41. Bridge MF, Perzin KH. Primary adenocarcinoma of the jejunum and ileum. A clinicopathologic study. Cancer, 1975; 36(5): 1876–1887.
42. Connor SJ, Hanna GB, Frizelle FA: Appendiceal tumors: retrospective clinicopathologic analysis of appendiceal tumors from 7,970 appendectomies. Dis Colon Rectum, 1998; 41: 75-80.
43. Ha J, Tan WA (2012) Gastrointestinal Carcinoid Tumours: A Review. J Gastroint. Dig Syst, 2012; 2: 107.
44. McCusker ME, Coté TR, Clegg LX, Sobin LH: Primary malignant neoplasms of the appendix: a population-based study from the surveillance, epidemiology and end-results program, 1973-1998. Cancer, 2002; 94: 3307-3312.