

# Clinicopathologic Profile of Gastric Carcinomas at the University Hospital of the West Indies

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## ABSTRACT

*The objective of this study was to examine the clinicopathologic features of gastric cancer seen at the University Hospital of the West Indies (UHWI) and to compare the findings with other studies. A retrospective study was conducted using data obtained from the surgical pathology reports of all gastrectomies and gastric biopsies during the period January 1993 and December 2002. Additional cases were identified from the Department of Surgery's audit database. Demographic, clinical and pathological features were analyzed. Two hundred and sixteen patients were identified, 126 males and 90 females. One hundred and thirty-six underwent biopsy procedures but no definitive surgery aimed at cancer eradication, while 70 had gastrectomy. The peak age prevalence in both males and females was the 70–79-year age group. While the antrum was the commonest site, there was an overall increase in tumours of the gastro-oesophageal junction and tumours of the entire stomach in the latter five-year period of the review especially in the 50–59-year age group. Epigastric pain and constitutional symptoms were the common presenting features, and the most common gross tumour characteristic was an ulcerating mass, while histologically, the intestinal variety was most common. Lymph node metastases were common. Helicobacter pylori (H pylori) were present in 16.7% while chronic multifocal atrophic gastritis was present in 40%. This study indicates that the gastric cancer pattern is typical of developing countries. However, the low prevalence of H pylori in the resected specimens may indicate the importance of other risk factors for gastric cancer development in this population. This warrants further study.*

# Perfil Clínico-patológico de los Carcinomas Gástricos en el Hospital Universitario de West Indies

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## RESUMEN

*El objetivo de este estudio fue examinar los aspectos clinicopatológicos del cáncer gástrico observados en el Hospital Universitario de West Indies, y comparar nuestros hallazgos con los de otros estudios. Se llevó a cabo un estudio retrospectivo usando datos obtenidos de los reportes patológicos quirúrgicos de todas las gastrectomías y biopsias gástricas durante el período de enero de 1993 y diciembre de 2002. Se identificaron casos adicionales de la base de datos de auditoría del Departamento de Cirugía. Se analizaron aspectos demográficos, clínicos y patológicos. Se identificaron doscientos dieciséis pacientes, 126 hombres y 90 mujeres. Ciento treinta y seis fueron sometidos a procedimientos de biopsia, pero no se realizó ninguna cirugía definitiva encaminada a la erradicación del cáncer, en tanto que a setenta se les practicó gastrectomía. La prevalencia de edad pico tanto en hombres como mujeres fue el grupo de 70–79 años. Si bien el antro gástrico fue el sitio más común, hubo un aumento general en tumores de la unión gastroesofágica y tumores de todo el estómago en el último período quinquenal de la revisión especialmente en el grupo de 50–59 años de edad. El dolor epigástrico y los síntomas constitucionales fueron los síntomas más comunes que se presentaron, y la característica más común del tumor macroscópico fue una masa ulcerosa, mientras que histológicamente la variedad intestinal fue más común. Fueron comunes las metástasis del nódulo linfático.*

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*Helicobacter pylori (H pylori) estuvieron presentes en el 16.7 %, en tanto que la gastritis crónica atrófica multifocal estuvo presente en el 40%. Este estudio indica que nuestro patrón de cáncer gástrico es típico de los países en vías de desarrollo. Sin embargo, la baja prevalencia de H pylori en nuestros especímenes resecados, pueden ser un índice de la importancia de otros factores de riesgo tales como fumar, el uso consuetudinario del alcohol, o la dieta, en relación con el desarrollo del cáncer en nuestra población. Esto merece un estudio ulterior.*

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## INTRODUCTION

Gastric cancer is reportedly the fourth commonest malignancy in the world and approximately 60% of these cases occur in developing countries (1). Although Jamaica is not one of the reported high incidence areas for gastric cancer, the country bears a substantial burden of the disease. The stomach is the fourth commonest location of primary cancer in Jamaican males and the ninth commonest in females with prevalence figures of 8.9 per 100 000 and 4.4 per 100 000 respectively (2). It is the third commonest cause of cancer death in men and the fourth commonest in women (3).

Global figures show that, while the incidence of gastric cancer remains high, there has been a decline in cancers of the distal stomach, and a concomitant increase in cancers involving the cardia and oesophagus, in some ethnic groups (4). We compare the clinicopathologic features of gastric cancers seen at the University Hospital of the West Indies (UHWI) with other reported studies.

## MATERIALS AND METHODS

The surgical pathology reports of all gastrectomies and gastric biopsies submitted to the Department of Pathology, the University of the West Indies (UWI), Mona, over the ten-year period between January 1993 and December 2002 were reviewed retrospectively. Also reviewed, for the same time period, were cases of inoperable gastric carcinoma, identified from the Department of Surgery's audit database, in which biopsies of metastases identified at laparotomy were sent to the Department of Pathology. The latter receives specimens for all surgical operations performed at the UHWI and additionally reports on gastric biopsies and occasional gastrectomies performed in some private hospitals in the Kingston area. Patients with an operative diagnosis of gastric cancer, but in whom no biopsy procedures were done to confirm the diagnosis were excluded from this study. In the patients analyzed, clinicopathologic data were extracted from the reports using an abstraction form that recorded such data as patient age and gender, presenting symptoms, nature of specimen, gross and histologic appearances of the tumour. Each tumour was placed into one of the following histologic categories: intestinal, diffuse, mixed, poorly differentiated not otherwise specified or other histologic features including gastritis, gastropathy, hyperplasia, benign neoplastic polyps and the presence of *H pylori*. There was no attempt to stage the cases beyond early and advanced gastric cancer.

## RESULTS

The authors obtained clinicopathologic data for 216 patients. One hundred and thirty-six patients underwent biopsy procedures, but no definitive surgery aimed at cancer eradication, while seventy underwent gastrectomy. The remaining ten patients had gastric cancers that were deemed inoperable at laparotomy and the only operative procedure performed was biopsy of metastases (four lymph nodes, two omentum; one umbilical nodule; one ovary; one liver and one appendix), in order to confirm the clinical diagnosis.

There were 126 (58%) males and 90 (42%) females with a male: female ratio of 1.3:1. In both males and females, the age distribution revealed peaks in three age groups: 50–59, 60–69 and 70–79-years (Fig. 1). The ages of 14

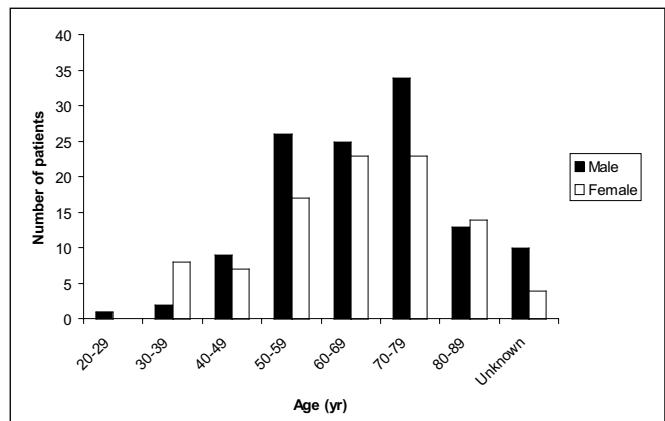


Fig. 1: Age and gender of 216 patients

patients (ten males and four females) were not recorded. Comparison of the age-related prevalence of gastric carcinomas occurring in the first five-year period under study (1993–1997), and in the second five-year period (1998–2002), revealed that the 60–69 and 70–79-year age groups showed high prevalence in both time periods, but that there was an increase in prevalence in the second period over the first for the 50–59-year age group (Fig 2).

Tumours located within the antrum were the commonest (56%), and these were followed by body tumours (17.6%), tumours spanning both antrum and body (7.9%), and tumours of the cardia (7.9%) (Table 1). These four categories of tumours were also the most frequently seen within the age groups of peak prevalence. A comparative analysis of the frequency of tumour location within the two 5-year

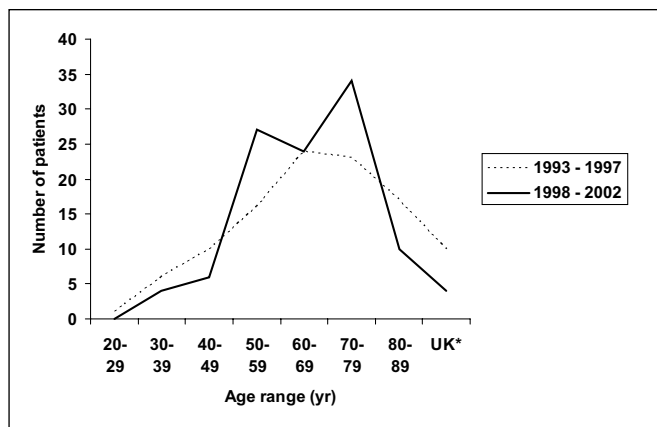


Fig. 2: Age-related incidence by year  
UK = unknown

periods investigated showed no difference for antral, body or cardiac tumours, but there was an overall increase in the number of gastro-oesophageal junction tumours and tumours involving the entire stomach, in the 1998–2002 time period. This however accounted for 3.2% of all patients seen.

Epigastric pain was the commonest presenting symptom, recorded in 50% of patients (Table 2). The Table also shows that this symptom was more common in patients with distal tumours (-55.1% of antral and body tumours) than in those with tumours of the cardia, where it was seen in only 29.4%. Constitutional symptoms and vomiting were also fairly common, being present in 34.7% and 33.3% of patients, respectively.

Table 3 shows that the commonest gross characteristic of the tumours (35.6%) was that of an ulcerating mass, while the commonest histologic type was the intestinal variety (53.2%). Of the 70 gastrectomy specimens received, two contained early gastric carcinomas while the remaining 68 cases showed advanced carcinomas. Examination of the non-neoplastic stomach revealed chronic multifocal atrophic gastritis (chronic gastritis with intestinal metaplasia) in 39.3%, chronic active gastritis in 40.7%, *H pylori* in 16.7% and adenomas in 2.8% (Table 4). Lymph node metastases were identified in 52 of 70 (74%) gastrectomy specimens. Four specimens had no associated nodes submitted. There was an average of eight and four nodes submitted in gastrectomies with positive and negative nodes respectively.

Table 1: Location of tumour by year of diagnosis

Year of diagnosis	Antrum	Antrum and Body	Body	Cardia	Gastro-oesophageal junction	Entire stomach	Unknown	Total
1993	14	0	5	4	0	0	1	24
1994	12	1	6	2	0	0	4	25
1995	10	2	4	3	0	0	0	19
1996	10	1	2	0	0	0	0	13
1997	17	2	5	1	0	0	1	26
1998	7	2	3	5	0	0	2	19
1999	16	2	4	1	2	1	3	29
2000	14	4	0	1	0	1	1	21
2001	10	1	3	0	1	0	2	17
2002	11	2	6	0	1	1	2	23
<b>Total</b>	<b>121</b>	<b>17</b>	<b>38</b>	<b>17</b>	<b>4</b>	<b>3</b>	<b>16</b>	<b>216</b>
(%)	(56)	(7.9)	(17.6)	(7.9)	(1.8)	(1.4)	(7.4)	(100)

Table 2: Symptoms with respect to location of tumour

Symptom	Antrum	Antrum and Body	Body	Cardia	Gastro-oesophageal junction	Entire stomach	Unknown	Total (% of all patients)
Epigastric pain	65	11	21	5	0	1	5	108 (50)
Vomiting	49	5	6	3	1	1	7	72 (33.3)
Constitutional symptoms	46	4	12	6	2	1	4	75 (34.7)
Gastric outlet obstruction	28	4	1	0	0	1	5	39 (18.1)
Upper gastrointestinal haemorrhage	18	1	12	3	2	2	2	40 (18.5)
Dysphagia	4	1	2	10	3	0	1	21 (9.7)

Table 3: Gross and microscopic characteristics of 216 tumours

Gross features	No of patients (%)	Microscopic features	No of patients (%)
Ulcerating	77 (35.6)	Intestinal	115 (53.2)
Polypoid/Exophytic	28 (13)	Diffuse	66 (30.6)
Mass, NOS	26 (12)	Poorly differentiated, NOS	18 (8.3)
Infiltrative/ Linitis plastica	23 (10.7)	Unclassified/Unknown	16 (7.4)
Irregular	14 (6.5)	Mixed	1 (0.5)
Nodular	13 (6)	TOTAL	216 (100)
Fungating	7 (3.2)		
Unknown	28 (13)		
<b>Total</b>	<b>216 (100)</b>		

NOS = not otherwise specified

Table 4: Other histologic features identified

Histologic feature	No of patients (%)
Chronic active gastritis	88 (40.7)
Chronic multifocal atrophic gastritis	85 (39.3)
<i>Helicobacter pylori</i> organisms	36 (16.7)
Adenoma	6 (2.8)

## DISCUSSION

Cancer of the stomach is the second most common cause of cancer-related deaths in the world (5); in Jamaica, it is the third commonest cause of cancer-related deaths in men and the fourth commonest in women (3). Several countries have reported changing trends in gastric cancer, but there has been no recent documentation of trends in the Caribbean. The finding of a male: female ratio of 1.3: 1 at the UHWI is unexpected as data from the Jamaica Cancer Registry (2) gives a ratio of 2:1. One possible explanation for this disparity is whereas the UHWI serves as a referral centre for the entire island while the Jamaica Cancer Registry is a population based registry that analyzes data from Kingston and St Andrew only. Gastric carcinoma is uncommon before the age of 40 years, but, thereafter, its incidence increases progressively with increasing age, peaking in the seventh decade of life (6). The data reflect this global trend for the most part, with the disease in our patients being commonest between the ages of 50 and 79 years. Epigastric pain, constitutional symptoms and vomiting were the most common presenting symptoms and are consistent with other reports (6, 7). These symptoms are generally commoner in patients with tumours of the distal stomach, and in those with advanced disease (8, 9). In the present study, data correlate well with this association, as the majority of tumours arose in the distal stomach, and most carcinomas in the resected specimens were advanced.

There has been a reported increase in the prevalence of tumours at the gastro-oesophageal junction, but the antral

region is still the commonest location for gastric carcinomas (4, 7, 8). There was also seen an increase in tumours at the gastro-oesophageal junction, and while these remain a minority, it is similar to the trend in developed countries (8).

Early gastric cancer was present in two patients in gastrectomy specimens (2.8%). This figure is less than the 9–17% seen in western countries where screening is not employed (10), and far below the prevalence in Japan where it now exceeds the diagnosis of advanced gastric cancer (11). The patients in the present study were symptomatic, but not preoperatively diagnosed with early gastric cancer. It highlights the importance of aggressive endoscopy and biopsy in minimally symptomatic patients in order to improve survival. The yield from endoscopy can be improved by using the addition of new techniques such as chromoendoscopy and magnification in the diagnosis of precancerous lesions and early gastric cancer in high risk patients (12). Patients and their physicians need to be aware of the importance of early detection and surgery with complete resection as there is little to be gained from the addition of adjuvant chemotherapy and radiotherapy to patients with early stage disease (13).

The finding that only 70 gastrectomy specimens were received from 216 patients diagnosed with gastric cancer is sobering, when one considers that resection provides not only the only chance of cure, but also a better means of providing palliation (11). The explanation may in part be due to the fact that biopsy specimens from private institutions are more likely to be sent to the Pathology Department of the UWI rather than resected specimens. Be that as it may, this finding is not unique as data from the National Cancer Database on stomach cancer in the United States of America (USA) showed that of 16 992 cases seen during the years 1985, 1986 and 1992, 41.4% had no reported cancer-directed surgery (14). That approximately thirteen per cent of the patients had palliative surgery without histological confirmation has implications for palliative chemotherapy which has been shown to improve the quality of life and life expectancy in the patients so treated (15, 16).

The removal of perigastric lymph nodes continue to be the most common form of lymph node dissection performed in most western countries (17). In both large retrospective and randomized prospective trials more extensive lymphadenectomies do not affect survival (18, 19). This is unlike data from Japan where more extensive lymph node dissection is done and appears to confer survival advantage. Critical analysis however suggests that the results in Japan are due to stage migration with more accurate staging and more accurate information on outcome (20, 21). The matter is still controversial as there is evidence to show improved survival independent of the phenomenon of stage migration when extended lymph node dissections are performed by experienced surgeons in western centres (22).

The prevalence of *H pylori* organisms in the cases of gastric cancer was low and is below the prevalence of the infection in the general population (23). This is partially

explained by the fact that only after 1997 did histology reports contain consistent comments about the presence or absence of the organism and this represents a major limitation of the study. There is evidence to implicate chronic *H pylori* infection as a major risk factor for the development of intestinal type of gastric cancer (24, 25), and its eradication in patients without precancerous lesions has been shown to reduce gastric cancer development (26). The low prevalence of *H pylori* infection in this population of gastric cancer patients could indicate that other risk factors such as smoking, excessive alcohol consumption and diet high in salted, smoked, or preserved foods in patients of low socio-economic status (8, 27) may play a dominant role in the Jamaican population. Diets rich in fruits and vegetables (28) and in antioxidants such as ascorbic acid and beta-carotene (29) have been shown to reduce gastric cancer development and regress precancerous lesions in at risk patients. This may form inexpensive primary preventative measures and warrants further evaluation in the Jamaican population.

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