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MANAGEMENT OF CANCER OF THE STOMACH IN MULAGO HOSPITAL KAMPALA, UGANDA
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ABSTRACT

Objective: **To determine the clinical presentation, mode of investigation and management of gastric cancer at New Mulago Hospital.**
Design: **Prospective descriptive study.**
Settings: **Three general surgical wards, Department of Surgery, New Mulago Hospital.**
Subjects: **Thirty five patients were studied within 12 months.**
Results: **Gastric cancer was found to be prevalent in tribes inhabiting volcanic areas of south western Uganda especially the Banyankole (25%). The commonest mode of clinical presentation was epigastric pain, weight loss, constipation, epigastric tenderness, palpable epigastric mass and anaemia. The most accurate mode of investigation was by endoscopy followed by barium meal. The commonest locality was the pyloric atrium (40%) histologically adenocarcinoma (95.5%) predominated. Gastric cancer was found to be more common in patients with blood group O+ve. All patients had been subjected to some kind of medical treatment especially with antiacids, H_2 receptor antagonists which contributed to the delay in presentation. The majority of patients (94.5%) presented with advanced disease and no curative surgery was possible.**
Conclusions: **These results show that early diagnosis of gastric cancer is still a dream at Mulago hospital since most patients present with advanced disease. To address this problem, all health workers should be sensitised on symptoms and signs for early aggressive investigation or an early referral to enable early diagnosis of gastric cancer. The investigatory capacity of rural hospitals should be boosted to enable early detection of gastric cancer.**

INTRODUCTION

Carcinoma is the predominant malignant gastric tumour(1). Other gastric malignancies are lymphoma and leiomyosarcoma.

From the records in the cancer registry, there has been a tremendous increase in the number of cases of cancer of the stomach in Uganda during the years 1989 to 1994. It remains a very significant clinical and epidemiological problem and a cause of great mortality and morbidity because the disease is typically diagnosed at an advanced stage when there is no possible surgical cure(1-4); it is still hard to identify high risk groups in Uganda for active surveillance as is done in developed countries; no adequate investigatory capacity at the rural and regional hospitals for early detection of gastric cancer and; there is low suspicion index by medical officers in the peripheral health units about gastric cancer.

This study was carried out to improve on the potential to make a quick, accurate diagnosis and proceed to relevant cost- effective surgical treatment to improve on patient quality of life.

MATERIALS AND METHODS

This was a one year prospective descriptive study on clinical presentation, diagnosis and management of gastric cancer in New Mulago hospital in 1995.

It was carried out on patients admitted on three general surgical wards of New Mulago hospital with clinical, radiological, endoscopic and histopathological diagnosis of gastric cancer. These patients were recruited from out patient clinic, emergency ward or as referred cases within the study period.

All patients gave informed consent, a standard proforma was completed for each patient admitted regarding age, sex, tribe, history of alcohol and cigarette smoking, main diet, previous medical treatment, symptoms and signs, investigations, histological report and type of treatment options.

RESULTS

Age and sex: There were 27 males and eight females with male/female ratio of 3:1. The age ranged from 34 to 78 years. Only one patient was aged below 40 years (Table 1). Mean age for females was 53.8, for males 56.1.

Table 1

Age and sex distribution of gastric cancer (n=35)

Age	Male	Female	Cumulative total
30-39	1	–	1
40-49	5	4	9
50-59	13	1	14
60-69	4	2	6
70+	4	1	5
Total	27	8	35

Table 2

Tribal distribution of gastric cancer in Uganda

Tribe	Frequency	%
Baganda	14	40
Banyankole	9	25.7
Banyarwanda	3	8.6
Bafumbira	2	5.7
Kakwa	2	5.7
Lugbara	1	2.9
Mukiga	1	2.9
Muluri	1	2.9
Murundi	1	2.9
Mutoro	1	2.9

Nearly 49% of all patients originated from south western Uganda. The Baganda comprised 40% of all the patients, the reason being that Mulago is within Buganda and therefore have easy reach, 8.6% were from north western Uganda and none of the patients were from north east and eastern Uganda.

Alcohol, smoking and gastric cancer: Eighty per cent of the patients had a history of consuming alcohol and 92% of these had consumed alcohol for more than five years, while 7.1% did consume alcohol for less than five years, with the majority (96.2%) consuming local brew. Forty five per cent of the patients had been smokers and of the smokers 87.5% had smoked for over five years.

Diet and gastric cancer: The majority of patients (88.6%) had a high intake of starch foods, fat and protein, but low intake of vitamin containing foods like fresh fruits and vegetables. All the 35 patients studied had no family history of cancer of the stomach.

Table 3

Type of previous treatment of patients with gastric malignancy (n=35)

Treatment	Frequency	%	Duration of treatment in months Minimum	Mean	Median	Maximum
Antiacids	34	97.1	3	46.4	42	300
H_2-receptor antagonists	13	37.1	1	16.4	3	72
Previous gastric operations	3	8.6	–	–	–	–
Traditional local herbs	2	5.7	–	–	–	–

All patients had previous medication, 97.1% had antiacid treatment for a minimum duration of three months and maximum of 300 months. Thirteen patients (37.1%) had been on H_2 receptor antagonists for a minimum and maximum duration of one and 72 months respectively. There were three patients who had previous gastric operations.

The most common presenting symptoms were epigastric pain (100%), weight loss (88.5%), constipation (88.5%) and nausea/vomiting (74.2%) (Table 4).

Table 4

Presenting symptoms (n=35)

Symptom	No. of patients	%	Duration of symptoms <1 year	1-5 yrs	>5 yrs
Epigastric pain	35	100	12	18	5
Weight loss	31	88.5	28	3	–
Constipation	31	88.5	24	7	–
Nausea and vomiting	26	74.2	21	5	–
Dizziness	24	68.5	23	1	–
Anorexia	23	65.7	18	3	1
Abdominal swelling	17	48.5	10	7	–
Cough	14	40	14	–	–
Dysphagia	11	31.4	8	3	–
Excessive salivation	8	22.8	8	–	–
Melaena	8	22.8	7	1	–
Haematemesis	6	17.1	6	–	–
Acute abdomen	2	5	3	–	–
Swelling of feet	2	5	2	–	–

Two patients presented with an acute abdomen due to peritonitis following perforation of malignant gastric ulcers. Most of the patients presented with symptoms of advanced gastric malignancy and some with complications.

The majority of patients presented within one year and the rest between one and five years. This delay in presentation could be attributed to temprorary relief obtained from medical treatment (Table 3).

Table 5

Frequency of physical signs in gastric cancer (n=35)

Physical sign	No. of patients	%
Tender epigastrium	33	94.3
Body wasting	33	94.3
Palpable mass in epigastrium	27	77.1
Pallor (anaemia)	22.5	62.5
Supraclavicular lymphnodes	15	42
Abdominal distension	12	34
Dehydration	11	31
Hepatomegaly	10	28.6
Presence of ascites	10	28.6
Succussion splash	10	28.6
Visible peristalysis	8	22.9
Visible collaterals	4	11.4
Jaundice	2	5
Sr. Mary Joseph's nodes	1	2

The most common physical findings were epigastric tenderness (94.3%), body wasting (94.3%), palpable mass in epigastric (77.1%) and pallor (62.5%).

Fifteen (42%) of the patients had enlarged supraclavicular nodes (Virchow's nodes) and one patient had the tumour metastases at the umbilicus (Sr. Mary Joseph's nodes).

Table 6

Relation of ABO group distribution in gastric cancer cases to ABO groups in Uganda (n=35)

Blood groups	Distribution of ABO groups in gastric cancer %	Distribution of ABO groups in the population of Uganda in Kampala	Average ABO distribution in tribes studied
A	8.6	27	22.9
B	11.4	20	22.3
AB	–	5	4.9
O	71.4	48	45.7

Of the 35 patients whose blood groups were recorded, 25 (71.4%) were group O +ve, four (11.4%) were B +ve and three (8.6%) were group A +ve.

Table 7

Tumour locality comparing endoscopy and barium meal

Location or site	Methods	
	Endoscopy (%)	Barium meal (%)
Cardia	6 (17.1)	6 (17.1)
Lesser curvature	10 (28.6)	9 (25.7)
Pyloric antrum	19 (54.0)	10 (28.5)
Body	–	–
No malignancy detected	–	7 (20)
	35 (100%)	32 (91.4%)

From Table 7, both endoscopy and barium meal have proved useful techniques in diagnosing gastric malignancy. But endoscopy supercedes barium meal being able to detect all cases compared to barium meal studies which failed to detect the presence of cancer in 20% of the 32 patients who had barium meal.

Table 8

Histological diagnosis of gastric cancer

Histological	No. of patients	%
Adenocarcinoma	32	91.5
Leiomyosarcoma	1	2.9
Anaplastic	2	5.7
Total	35	100

Table 9

Treatment option of gastric cancer at Mulago hospital

Treatment option	No. of patients	%
R1 resection	2	5.7
R2 resection	–	–
R3 resection	–	–
Palliative surgery	15	42.9
Laparotomy and biopsy	18	51.4
Total	35	100

All patients had biospsies taken from the tumour site at laparotomy or on endoscopy. Thirty two patients (91.5%) had well differentiated adenocarcinoma; no lymphoma was diagnosed. Curative surgery could only be possible in two of the patients (Table 9). Fifteen of the cases had palliative surgery only, mainly antecolic gastrojejunostomy.

DISCUSSION

The exact incidence of gastric cancer in Uganda is not known though Templeton in 1972 put it at 2.9 cases/million per year in females and 5.5/million per year in males(17). However it remains one of the leading distressing gastro intestinal malignancies and a major cause of death in Uganda. Gastric carcinoma is more prevalent in males than females, with a male:female ratio of 3:1. This is agreeable with other studies elsewhere for instance, it was found to be 2:1 in Nyeri, Kenya(1), 2:1 in the UK(6), 2:6 in Nigeria(3), 2:1 in Ghana(7) and 3.6:1 in Osaka Japan(8).

The majority of patients with gastric carcinoma presented above the age of 40 years and had a mean age of 56.6 years. Unfortunately, the majority of these patients presented with advanced gastric cancer and therefore no curative surgery was possible. By comparison, in Osaka Japan the mean age of patients with early gastric cancer in two studies was 52.7 and 57.3 years(8). However the mean age in this study is slightly higher than what was reported by Templeton in 1973 of 52.7 in Uganda.

Nearly half the patients (48.7%) originated from south western Uganda (Table 2) which has volcanic highlands. This concurs with previous findings(17) where the majority of patients with gastric cancer live in geologically young volcanic areas as found in areas around Mt. Kilimanjaro, Japan, New Zealand, Chile and Hawaii(17).

In 1973 it was observed that tumours of the stomach were common in tribes living in the west of the country and Rwandese immigrants(17). The same still holds even upto today. The Banyankole tribe was the most commonly affected accounting for more than 58% of patients from western Uganda. In this study the Baganda tribe had the biggest number of patients with gastric cancer contributing 40% overall. This could be attributed to an easy access to Mulago hospital where they comprise more than 75% of the patients seen.

All the patients in this study had at least some previous medications in form of either antacids, H_2 receptor antagonists, herbs or surgery. Nearly 100% of these patients were treated for dyspeptic symptoms with antacids for a period ranging from three months to twenty five years. It is worth noting that even when these patients were not showing clinical improvement on prolonged antacid treatment, they were switched to H_2 receptor antagonists before any effort was made to investigate them for gastric carcinoma, bearing in mind that it has vague symptoms and signs. This is in agreement with findings at Nyeri

Kenya(1) that some patients present early but are treated as cases of peptic ulceration and by the time the disease is discovered, it is already advanced. The majority of these patients presented within one year of onset of symptoms.

Three patients had previous gastric operations which is a known risk factor in the development of gastric cancer(9) and therefore, surgery for peptic ulcer disease should be limited to procedures which have not been shown to have any association with increased risk of gastric cancer like vagotomy(10). In case it is not possible, adequate, long term follow up is essential. Use of antacids or H_2 receptor antagonists in gastric ulcer patients should be avoided, unless supported by regular review of patients with endoscopy and barium meal studies because there is a link between reduced gastric acidity and gastric cancer(10,11).

All the patients presented with epigastric pain (100%), as compared to 93% of cases reported at Nyeri, Kenya(1), 76%, 100% and 76% of cases reported at Ibadan(3,4,7) respectively. The majority presented with features of advanced gastric cancer or its complications such as weight loss (cachexia), constipation, nausea, vomiting, dizziness, anorexia and Troisier's sign(12).

Late presentation of patients with gastric cancer has been noted in other places such as Ibadan hospital, Nigeria(4), in Nyeri, Kenya(1) and University of Medicine, Texas, USA(2).

The majority of patients with gastric cancer at Mulago had blood group O +ve. This is nearly the same as reported at Consolata Mission Hospital in Nyeri, Kenya and at Ibadan, Nigeria in 1971 and 1973(1,4,13) and it could be attributed to the high prevalence of blood group O in the majority of the Ugandan population, especially those living in the western and central parts of the country(15).

At laparotomy most of the tumours were located in the pyloric antrum. This could be the result of gastric ulcers in this region turning malignant. This is supported by the fact that the majority of the patients were blood group O +ve which is a predisposing factor to gastric ulcers, and all these patients had been on treatment for peptic ulceration for a long time.

Well differentiated adenocarcinoma was found to dominate the gastric tumours in Mulago. This is in agreement with other studies elsewhere(2,3,5,10,13,14,16,17). Biopsy can only allow a positive diagnosis of gastric carcinoma(2), but cannot differentiate between early and advanced gastric cancer.

The commonest site for gastric cancer in this study was the pyloric antrum as seen on endoscopy, barium meal and laparotomy. This was similar to findings from other studies(1,2,5,11,14,17,18) followed by lesser curvature. Barium meal study did not show cancer in seven cases but these were detected by endoscopy. Barium meal study is not good at picking small lesions especially if too much barium is given initially and unless the technique includes an examination in inverted position, irregularities in the cardia and fundus tend to be over looked; also flat, mucosal growth of early gastric cancer may remain undetected(16,19). The accuracy of barium meal study is greater for pyloric antral growth as seen in this study. Whenever endoscopy is available it should be the first investigation once gastric cancer is suspected(8).

In this study, it was able to detect all the gastric cancers. Waldron and co-workers did not find difficulty in diagnosing gastric tumours by endoscopy irrespective of the locality of the tumours in the stomach and put the sensitivity range of endoscopic biopsy from 69% to 99% on routine clinical practice(18).

Endoscopy has several advantages, one is able to look at the gastric mucosa grossly and can take biopsy of all abnormal or suspicious areas of gastric mucosa. Secondly, one can obtain gastric washings for exfoliative cytology which can confirm the diagnosis of cancer in doubtful cases. Other workers have concluded that endoscopic cytology combined with endoscopic biopsy markedly improved diagnostic yield of gastric malignancy(18). It is also possible to take biopsy for culture and histology for *Helicobacter pylori* which is a postulated aetiological factor(20,21,23). The majority of patients presented with advanced gastric cancer, radical curative surgery was therefore possible in only two patients (5.7%). Only 42.9% of the remaining patients were fit for palliative surgery(3,24).

While in developing countries the majority of patients with gastric carcinoma present with advanced disease, in developed countries the majority are detected when the disease is at an early stage(2,21); for instance Isozak and co-workers in 1995(8) handled patients with early gastric cancer only. Oertli *et al*(22) in 1994 handled 232 gastric cancer patients, of whom 171 had early gastric cancer and had resection, 49 underwent palliative surgery and 12 had advanced gastric cancer and were treated non surgically(24).

In conclusion from this study done on patients in a referral hospital, gastric cancer is more prevalent in tribes living in the south western part of Uganda. It presents at an advanced stage in Mulago making curative surgery unachievable. Adenocarcinoma was the commonest histological type and the commonest locality for gastric cancer was the pyloric antrum(22,24).

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REFERENCES

1. Kakande, I. Gastric tumours at Consolata Mission Hospital Nyeri. The proceedings of the Association of Surgeons of East Africa 1991; 79-1
2. Arthur Boddie, Charles M. Mcbride and Charles M. Balch. *Gastric Cancer America J. Surg.* 1959; **157:** 595-604.
3. Elebute, V.S. Ngu, A.R., Mainwaring, R.C. Eruchalu (1962) Cancer of stomach seen at University College Hospital Ibadan. *West Afr. Med. J.* 1963; 11-17.
4. Olurin, E.O. and Itayemi, S.O. Carcinoma of the stomach. A study of 122 cases. *J. Nig. Med. Ass.* **1:** 42-47.

5. Golematis, P. Tzardis, Hatzikostas, P.K. Pabadimitriou and N. Haritopoulos. Changing pattern of distribution of carcinoma of stomach. *Brit. J. Surg.* 1990; **77:** 63-64.
6. Fielding, J.W.L. Gastric cancer. *Surgery.* 1990; **2033:** 2038.
7. Badoe - Malignant disease of gastro intestinal tract in Korle Bu Hospital Accra, Ghana 1956 - 66. *West Afr. Med. J.* 1966; 181-183.
8. Isozaki, J. Okajima, Momura, E., Ichinona, T., Fuji, K., Izumi, N. and Takeda, Y. Post-operative evaluation of pylorus-preserving gastrectomy for early gastric cancer. *Brit. J. Surg.* 1996; **83:**266-269.
9. Cusheri, A. Gastrectomy for gastric cancer. Definition and objectives 25, 569. *Br. J. Surg.* 1986; **73:** 513-514.
10. Fielding, J.W., Ellis, D.J. and Jones, B.G. Natural history of gastric cancer, results of 10 year regional survey. *Brit. Med.* 1980; **281.**
11. Allum, W.H., Powel, D.J., McConkey, C. *et al.* 1989. Gastric cancer: A 25 year review. *Brit. J. Surg.* **76:** 943-945.
12. Allum, S. Bearley, Wheatley. K.E., Dykes, P.W. *et al.* Acute hemorrhage from gastric malignancy. *Brit. J. Surg.* 1990; **77:**19-20.
13. Onaya, H., Saida, Y., Matsueda, Tsunoda, H., Takada, Y., Kon, Y., Tanaka, Y., Nozawa, K., Nakajima, T. and Itai, Y. Distribution and frequency of gastric cancer at the para cardia region. *Nippon-Igaku-Hoshasen-Graddai-Zasshi.* 1994; **54:** 333-9.
14. Oscar J. Traynor, John Lenon, Peter Dervam and Thomas Colligan. Diagnostic and prognostic problems in early cancer. *Amer. J. Surg.* 1987; **154.**
15. Sebabi, E.C.T. and Nzaro, E. Distribution of ABO and Rh(D) phenotypes in Uganda. *Vox Sanguinis.* 1974; **26:** 74-82.
16. Reissenweber, N. and Acosta, G. Early diagnostic cancer in Uruguay. *Rev. Esp. Enfern. Digst.* 1994; **85:** 169-72.
17. Templeton, A.C. Tumours in a tropical country: A survey of Uganda. 1964; **68**:40-44.
18. F. Bozetti, E. Roselli, E. Regalia, G. Bonfanti, R. Doci, D. Ballarini and L. Gennari. Early and late results of extended surgery for cancer of stomach. *British J. Surg.* 1990; **77:** 53-56.
19. Waldron M. Kerin, Ali, A., McAnena, O.J., McGuire, M., McCarthy, C.F. and Given, H.F. Evaluation of the role of endoscopic biopsies and cytology in the detection of gastric malignancy. *Brit. J. Surg.* 1990; **77:** 62-63.
20. Stemmermann, Gn. Intestinal metaplasia of the stomach: a status report. *Cancer.* 1994; **74:** 556-64.
21. Gordon A. Mcfarlane. 1994. Incidence of gastric cancer among Meru people of Kenya.
22. Oertli, D., Herzog, U. and Tondelli, P. Prognostic factors in resected stomach carcinoma. *Schweiz-Med wochenschr.* 1994; **124:** 945-52.
23. Hwang, H., Dwyer, J. and Russel Ru. Diet, helicobacter pylori infection, food preservation and gastric cancer risk, are there new roles of preventive factors. *Nutr. Rev.* 1994; **52:** 75-83.
24. Allum, W.H., Haliissey. M.T. and Keliy Krystyna, A. 1989b. Adjuvant chemotherapy in operable gastric cancer. 5 year follow up of first British stomach cancer group trial.

BOOK REVIEW

Green Andrew. *An Introduction to Health Planning in Developing Countries.*
Second Edition. Oxford: Oxford University Press, 1999. 317 pages.
ISBN: 0-19-262984-0. Price: £25.95 (paperback)

New books on health planning are rare in the flow of medical literature, and those focussing on developing countries are very few and far between. The first edition of this book was published in 1992, and this second edition has been prompted mainly by the health sector reform process that has gained momentum in many countries during the 1990s. Green remains a supporter of the primary health care (PHC) strategy as a basis for health systems development and for appropriate reforms. He also believes in an important role for the state in the health sector and in health planning as a mechanism to exercise this role.

After a couple of introductory chapters on planning as a concept and the process of planning and its relation to the basic problem of scarcity and choice, the author reviews the PHC strategy twenty years after Alma Ata and examines the most common components of health sector reform and how they relate to each other. He pays attention to the potential role of NGOs, a subject that he has addressed more extensively in another book (Green, A. and Matthias, A. Non-goveernmental organisations and health in devleoping countires. Basingstoke: Macmillan 1997.). There are separate chapters on healthcare costs, budgeting, financing, informaion for planning, priority setting, project and programme implementation and human resource planning. Each chapter ends with a reference list of relevant literature and with an exercise to stimulate readers to develop their own views on subjects addressed. At the end of the first chapter there are useful lists of international health planning journals, annual publications and data sources and relevant Internet websites. The book ends with a 13 page index guiding readers to the relevant sections.

This is a carefully balanced and well written text on strategic health planning particularly, but not exclusively, in developing countries. The primary health care strategy versus health sector reform is a tricky subject well handled by the author. Readers looking for texts on more specific subjects within the health planning field will be guided by the reference lists and teachers on health management and planning and on community health will be helped by the exercises proposed at the end of the chapter.

The book is recommended for health related academic and research institutions, health ministries and NGOs involved in health work in developing countries, medical libraries in the North and in the South, donor agencies supporting health development and individual professionals who conduct research or teach on the subjects mentioned or who have a keen interest in health systems development and planning in developing countries.

Other books partly covering the same ground include Akhtar R. (ed). Health care patterns and planning in developing countries. Connecticut: Greenwood Press 1991; Amonoo-Lartson R. et al. District health care: challenges for planning, organisation and evaluation in developing countries. Second ed., London: Macmillan 1996; Barker C. The health care policy process. London: Sage 1996
Collins C. Management and organization in developing health systems. Oxford: Oxford University Press 1994.
Reinke W. (ed). Health planning for effective management. New York: Oxford University Press, 1988.
Walt G. Health Policy: An introduction to process and power. London: Zed Books 1994.

Akhtar has included a number of country case studies which may be useful to some readers while Amonoo-Lartson et al are strongly focussed on the district and sub-district situation, reflecting a wealth of practical experience from this level. Barker and Walt address the health policy analysis and policy making process while Collins and Reinke deal with the broader issues of planning and management in the health sector in more and less developed countries. Green's book is more strongly focussed on the situation in developing countries and is also more up to date on issues related to the policy reform process.

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