

Malignant Diseases of the Stomach in Ibadan, Nigeria: A 19-year appraisal.

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Background: Malignant lesions of the stomach have a wide geographical variation in prevalence. This study was aimed at determining the pattern of gastric malignancies in Nigeria, a developing country like and compares this to what obtains in the developed countries.

Methods: a retrospective study utilizing case-files, histopathology reports and cancer registry data of patients who have been operated on for a pre-operative diagnosis of carcinoma of the stomach in the University College Hospital Ibadan, Nigeria from 1990 to 2008; a period of 19 years.

Results: There were 286 patients with a male to female ratio of 1.4: 1. The age range was 24 to 99 years with an average age of 55.35 years. The yearly average was approximately 15 patients annually. There were 18% of the total who were 40 years and below. Majority of the cases were adenocarcinoma (89%) with a few other cases of Carcinoid tumour, Squamous cell carcinoma, Leiomyosarcoma, lymphomas and Gastrointestinal Stromal tumour (GIST).

Conclusions: Incidence rates of malignant disease of the stomach in Nigeria affect the 50-70 years age-group, have a slight male predominance and do not seem to be increasing or decreasing. There seems to be no role at present for *Helicobacter pylori* in the aetiology of gastric carcinoma in Nigeria.

Introduction

Carcinoma of the stomach has been shown to be decreasing in incidence in the western world. Not much is known about the incidence rates in a developing country such as Nigeria. The University College Hospital Ibadan receives referrals for malignant disease from all over the country and neighbouring countries like Benin and Togo. Though the figures obtained for malignant disease of the stomach cannot be the most accurate reflection of the incidence of the disease in Nigeria as a whole, it still gives an idea of the magnitude of the problem and the age-group that is more affected.

Patients and Methods

The study was a retrospective study utilizing case-files, histopathology reports and cancer registry data of patients who have been operated on for a pre-operative diagnosis of carcinoma of the stomach in the University College Hospital Ibadan, Nigeria from 1990 to 2008; a period of 19 years.

Results

There were 286 patients operated upon for a presumed diagnosis of carcinoma of the stomach at our institution between 1990 and 2008. The average annual rate was approximately 15 patients per year. There were 168 male patients and 118 female patients giving a male: female ratio of 1.4: 1. The ages ranged from 24 to 99 years and the average was 55.35 years. The peak was in the 61-70 years age group with significant increases between 41 to 60 years. Patients aged 40 years and below accounted for 18% (Table 1 and Figure 1).

Table 2 shows the histopathological types of gastric malignancies. By far the commonest type was adenocarcinoma which accounted for 89% of gastric malignancies of which 4.3% were mucin-secreting and 2.7% were signet ring type. Other types included leiomyosarcoma (3%), carcinoid tumour (2.45%),

Non-Hodgkin's lymphoma (2.1%), squamous cell carcinoma (1.4%) and Hodgkin's lymphoma (0.7%). Anaplastic carcinoma, malignant fibrous Histiocytoma and GIST contributed 0.35% each.

Table 1. Pattern of Age Incidence.

Age group (Years)	Number of patients	Percentage %	Male	Female	M: F ratio
11-20	2	0.7	2	0	2: 0
21-30	13	4.5	9	4	2.25: 1
31-40	36	12.6	20	16	1.25: 1
41-50	58	20.3	38	20	2: 1
51-60	62	21.7	32	30	1: 1
61-70	72	25	43	29	1.5: 1
71-80	34	12	15	19	1: 1.3
81-90	5	1.7	2	3	1: 1.5
91-100	4	1.4	3	1	3: 1

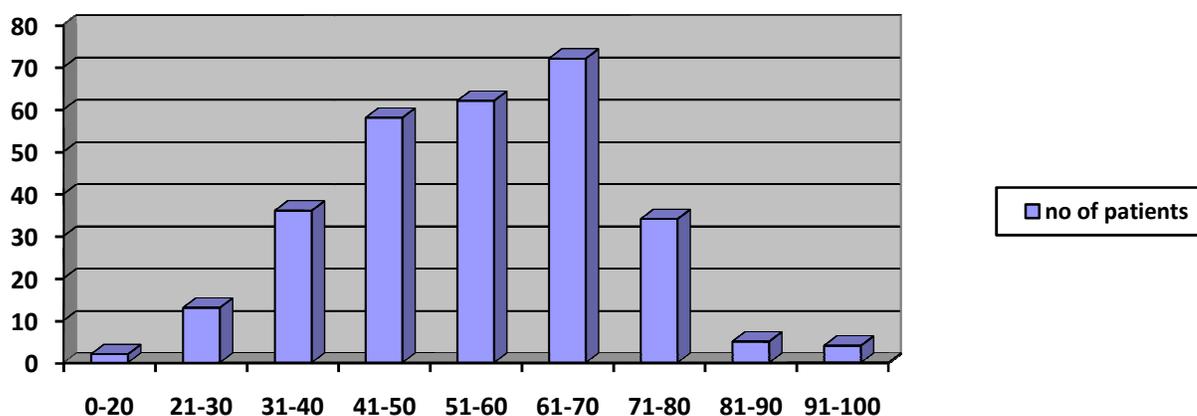


Figure 1. Age Distribution

Table 2. Distribution of gastric Histopathological Types

Histological Type	Percentage (%)
Adenocarcinoma	89.0
Leiomyosarcoma	3.0
Carcinoid tumour	2.45
Non-Hodgkin's lymphoma	2.1
Squamous cell carcinoma	1.4
Hodgkin's lymphoma	0.7
Anaplastic carcinoma,	0.35
Malignant fibrous Histiocytoma	0.35
GIST	0.35

Discussion

Malignant lesions of the stomach exhibit a wide geographical variation in prevalence¹. While the prevalence was initially high in the developed countries such as the United Kingdom and the United States of America, recent findings have indicated a significant drop in incidence rates in these countries which are attributed to better living conditions and dietary changes². Conversely, in spite of poorer living conditions, malignant lesions of the stomach have always enjoyed a comparatively low prevalence in Africa¹. With the advent of modernization and adoption of Western-type lifestyles in most countries in Africa, malignant diseases hitherto rare in the native African are on the increase³. Whether this is true for malignant stomach lesions is what this study will try to highlight by looking at our experience over 19 years and comparing this with literature from other states in Nigeria and

Table 3. Comparisons with Previous Reports from Nigeria

Publications from Nigeria	Annual Rates	Peak Age	Mean Age	M:F	Adenoc	Mucinous type	Signet-ring type.	Study Period
Alatise et al ¹ (Ile-Ife)	14	41-60	-	1.5: 1	93%	44.9%	-	16 years (1989-2005)
Abdulkareem et al ⁴ (Lagos/Shagamu)	8	40-59	-	1.8: 1	92%	-	-	11 years (1995-2006)
Afuwape et al ⁶ (Ibadan)	10	60-70	-	1.45: 1	75%	-	10%	5 years (2004-2009)
Komolafe et al ⁷ (Ile-Ife)	11	50-59	53.5	1.2: 1	95.3%	21.6%	8.8%	10 years (?Dates)
Ahmed et al ⁸ (Zaria)	12	-	51	1.4: 1	-	-	-	15 years (1995-2009)
Irabor et al (present study) (Ibadan)	15	61-70	55.35	1.4: 1	89%	4.3%	2.7%	19 years (1990-2008)

African countries. Our study showed a total case load of 286 patients over 19 years giving an average yearly attendance of 15 patients. A study done in 2009 by Abdulkareem et al, looking at malignant gastrointestinal tumours in the Southwest of Nigeria over 11 years showed an average of 8 patients per year with malignant gastric tumours⁴. Majority of these gastric tumors were adenocarcinoma (92%) which is in consonance with our findings of 89% adenocarcinoma as the dominant histopathological type. Other studies in Nigeria show annual incidence ranging from 8 to 14 patients^{1,5,6,7,8}. In Durban South Africa, about 16 cases per year were reported with a peak age in the 6th and 7th decades^{9,10}.

Higher annual rates of 20, 26 and 31 patients have been reported in Tunisia, Kenya and Senegal respectively^{11,12,13}. Yet these rates pale in comparison with average annual incidence rates from developed

countries of about 120 patients¹⁴. The male preponderance of these diseases is well-established. The male/female ratio obtained in this study compares favourably with other studies in Nigeria (Ibadan, Ife, Lagos, Shagamu and Zaria) which showed a range of 1.2: 1 to 1.8: 1^{1,4,5,6,7,8}. In other parts of Africa however, the ratios were overwhelmingly male in preponderance with a ratio of 3.4: 1 in Kenya¹² and 2.7: 1 in Dakar, Senegal¹³. The peak age range in this study was 61-70 years. This seems to be higher than reports from other sites in Nigeria where the range is from 40-60 years^{1,4,7,11}. The only explanation that comes to mind is probably the older patients with malignant gastric diseases are sent to the teaching hospital in Ibadan which traditionally and for a long time was the only place where the expertise was for management of malignant diseases. Looking at the study periods of the reports from various sites in Nigeria, it shows that Ibadan still receives more patients than the other sites (Table 3). This may also add to the reason why older patients were seen in more numbers in this study. Indeed, the previous study from this institution corroborates the peak age of 61-70 years⁶.

Helicobacter Pylori has been suggested to be a contributory factor in the development of gastric cancer. However in Africa, H.pylori is found everywhere and mostly acquired in childhood and therein lies an enigma, as high rates of H.pylori in the native African seem to produce low rates of carcinoma of the stomach¹⁵. Indeed, in a pathological study of 84 fresh specimens of gastric carcinoma in Ibadan, Nigeria in the year 2003 only 15 of the total (18%) had H.pylori detected in them¹⁶. But, in a study of 107 case in Ile-Ife (which is about 50 kilometres from Ibadan); the authors found that 60% of gastric carcinoma specimens contained H.Pylori⁷. In northern Nigeria, 50% of children are reported to be infected with H.pylori¹⁵, thus should a high level of H.pylori be seen as anything but expected? I believe the report of the low level is the newsworthy item.

Signet ring adenocarcinoma is described as that in which greater than 50% of the tumour is made up of isolated or small groups of malignant cells containing intracytoplasmic mucin which has pushed the nucleus to one side¹⁷. Mucinous and signet ring adenocarcinomas of the stomach are said to have unfavourable prognoses unless when treated early when the prognosis is actually favourable because of a slower rate of lymph node metastases¹⁷. In this study mucinous and signet ring types accounted for 4.3% and 2.7% respectively. A previous study from the same institution observed 10% signet ring types⁶. From Ile-Ife, mucinous and signet ring types were 21.6% and 8.8% respectively in one study⁷ and 44.9% in another study¹ from the same institution.

Conclusion

In conclusion, incidence rates of malignant disease of the stomach in Nigeria affect the 50-70 years age-group, have a slight male predominance and do not seem to be increasing or decreasing. In all it still remains a disease that its incidence is still a fraction of what obtains in the developed, Western world and the role of Helicobacter pylori cannot be established at the present time.

References

1. Alatise OI, Lawal OO, Adesunkanmi AK, Agbakwuru AE, Arigbabu OA, Ndububa DA et al. Clinical pattern and management of gastric cancer in Ile-Ife, Nigeria. Arab J Gastroenterol 2007; 8; 123-126.
2. McLoughlin JM. Adenocarcinoma of the stomach: a review. BUMC Proceedings 2004; 17; 391-399.
3. Irabor DO. Colorectal carcinoma: Why is there a lower incidence in Nigerians when compared to Caucasians? J Cancer Epidemiol 2011. doi: 10.1155/2011/675154

4. Abdulkareem FB, Faduyile FA, Daramola AO, Rotimi O, Banjo AAF, Elesha SO et al. Malignant gastrointestinal tumours in southwest Nigeria: A histopathological analysis of 713 cases. *West Afr J Med* 2009; 28; 173-176.
5. Mabogunje OA, Lawrie JH. Surgical management of advanced gastric cancer in Zaria, Nigeria. *Eur J Surg Oncol* 1985; 11; 361-364.
6. Afuwape OO, Irabor DO, Ladipo JK, Ayandipo B. A review of the current profile of gastric cancer presentation in the University College Hospital Ibadan; a tertiary health care institution in the tropics. *J Gastroint Cancer* 2011. Doi: 10.1007/si2029-011-9529-2
7. Komolafe AO, Ojo OS, Olasode BJ. Gastric malignancies and associated premalignant lesions in a teaching hospital in southwest Nigeria. *Afr J Biotech* 2008; 7; 2104-2111.
8. Ahmed A, Ukwenya AY, Makama JG, Mohammed I. Management and outcome of gastric cancer in Zaria, Nigeria. *Afr Health Sci* 2011; 11; 353-361.
9. Chetty R, Sitti CW. Gastric adenocarcinoma: A perspective from Durban, Kwazulu-Natal. *South Afr J Surg* 200; 38; 7-8.
10. Desai Y, Seebaran AR, Mars M. Gastric carcinoma in Durban's Indian population. *South Afr Med J* 1991; 1991; 79; 68-70.
11. Arfaoui D, Elloumi H, Hamila F, Gouma M, Ben Abdellaziz A, Sfar S et al. Epidemiologic profile of gastric cancer: A study of 140 cases. *Tunis Med* 2006; 84; 301-304.
12. Ogutu EO, Lule GN, Okoth F, Musewe AO. Gastric carcinoma in the Kenyan African population. *East Afr Med J* 1991; 68; 334-339.
13. Niang A, Mbenque M, Diouf ML, Diouf B, Ka MM, Pouye A et al. Current aspects of gastric cancer in Senegal. Epidemiological and clinical study of 220 cases. *Dakar Med* 1996; 41; 99-103.
14. Matley PJ, Dent DM, Madden MV, Price SK. Gastric cancer in young adults. *Ann Surg* 1988; 208; 593-596.
15. Segal I, Ally R, Mitchell H. *Helicobacter Pylori*- an African perspective. *Q J Med* 2001; 94; 561-565.
16. Oluwasola AO, Ogunbiyi JO. *Helicobacter pylori*-associated gastritis and gastric carcinoma in Nigeria. *Indian J Gastroenterol* 2003; 22; 212-214.
17. Hyung WJ, Noh SH, Lee JH, Huh JJ, Lah KH, Choi SH et al. Early gastric carcinoma with signet ring cell histology. *Cancer* 2002; 94; 78-83.