Full Length Research Paper

Gastric malignancies and associated pre-malignant lesions in a teaching hospital in South West Nigeria

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The histologic types of gastric malignancies and other associated histopathological indices in gastric biopsies received at the Department of Morbid Anatomy and Forensic Medicine, Obafemi Awolowo University Teaching Hospitals Complex, Ile-Ife, Osun State, Nigeria were determined. The study was retrospective and it involved collecting all slides on all available cases of gastric biopsies over a period of ten years and reviewing them to screen for gastric malignancies and associated pathologies of the stomach. Out of 107 cases of gastric malignancies reviewed, 102 (95.3%) were carcinomas, 3 (2.8%) were sarcomas and 2 (1.9%) cases were lymphomas. Of 102 cases of carcinomas, 36 (35.3%) were tubular adenocarcinomas, 14 (13.7%) cases were papillary adenocarcinomas, 22 (21.6%) cases were mucinous adenocarcinomas, 9 (8.8%) cases were signet carcinomas, and 21 (20.6%) were poorly differentiated adenocarcinomas. One hundred and two (95.33%) cases of gastric malignancies were in the pyloric antrum, 3 (2.80%) were in the gastric cardia, and 1 case each (0.93%) in the corpus and fundus. Sixty-four (60%) of cases showed moderate to numerous *Helicobacter pylori.* Mild chronic gastritis was seen in 11 (10%) cases, moderate chronic gastritis was seen in 75 (70%) of cases, and severe chronic gastritis was seen in 16 (15%) cases. Five (5%) cases were indeterminate. Mild glandular atrophy was seen in 5 (5%) cases, 32 cases (30%) showed moderate glandular atrophy, 1 (1%) case of severe glandular atrophy was seen. Intestinal metaplasia was seen in 17 cases (16%). Peptic ulcer disease was not seen in any of the cases.

Key word: Gastric malignancies, pre-malignant lesions, Nigeria.

INTRODUCTION

Carcinomas account for the highest number of gastric malignancies as seen in other countries of the world. The gastric antrum is the most common location. Precursor lesions like chronic gastritis, glandular atrophy, intestinal metaplasia, *H. pylori* infection play some role in the pathogenesis of gastric malignancies

The aims of this investigation were to study the histological type of gastric malignancies seen in the Department of Morbid Anatomy and Forensic Medicine, Obafemi Awolowo University Teaching Hospitals Complex, Ile-Ife over a ten year period and to classify them using the Classification Scheme proposed by the World Health Organization (WHO) for gastric malignancies, as-

certain the precursor or per-malignant lesions associated with gastric malignancies, analyze the cases using simple statistical methods, and to compare the data obtained with those of other centres in Nigeria, other parts of Africa and the rest of the world.

MATERIALS AND METHODS

All gastric endoscopic biopsies and surgical resection specimens received in the histopathological laboratory of the Obafemi Awolowo Teaching Hospitals Complex (OAUTHC), Ile-Ife over a ten year period constituted the material for the study. The original request cards were retrieved and studied. The data extracted includes age, sex, site of biopsies and the initial diagnoses. In our histopathology laboratory at OAUTHC, gastric surgical specimens are routinely formalin-fixed, paraffin embedded and cut at 2 – 3 μm. Occasionally gastric specimens are received fresh from the theatre prior to formalin fixation. The specimens are opened up along the greater curvature except in cases where the lesion is situated on

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Table 1. Age and sex distribution of gastric malignancies seen at O.A.U.T.H.C, Ile-Ife.

Age groups (years)	Males	Females	Total(N)	% Total
0-9	1	0	1	0.9
10-19	1	0	1	0.9
20-29	2	1	3	2.8
30-39	4	8	12	11.2
40-49	10	5	15	14.0
50-59	19	17	36	33.6
60-69	10	12	22	20.6
70-79	10	5	15	14.0
80-89	2	0	2	1.9
Total	59	48	107	100

Table 2. The histopathological subtypes of the gastric malignancies seen at Obafemi Awolowo University teaching hospital complex, Ile Ife.

Histologic types	Total no.	% of overall total	No. of male cases	No. of female cases
Carcinomas	102	95.3%	54	48
Sarcomas	3	2.8	3	0
Lymphomas	2	1.9	2	0
Total	107	100	59	48

the greater curvature. In these cases, the stomach is opened up along the lesser curvature, spread out and pinned onto a cork-board and then fixed faced-down in a bath filled with 10% buffered formalin overnight. The margins of the specimen are painted with Indian ink. A diagram is then drawn of the specimen, indicating the lesion and plans are made to take specific areas as sections for histology. All such cut sections are routinely examined using Haematoxylin and Eosin stains. Where necessary, special stains such as Alcian blue and Southgate's mucicarmine are done to characterize poorly differentiated tumours.

All gastric biopsies and gastrectomy specimens that had a diagnosis of malignancy were separated and considered for the purposes of the study. However, for a case to be included, all the bio-data such as sex, age and site of biopsy of the patient had to be complete. In analyzing the data, I used the more comprehensive classification of gastric malignancies proposed by the World Health Organization. The data obtained was analyzed using simple descriptive statistical methods.

Criteria for defining the histological features include:
I. the histogenesis of the tumour: epithelial, mesenchymal, or lymphoid,
II. the pattern of growth: tubular or papillary, and
III. the associated pathologies and pre-malignant conditions.

RESULTS

A total of 1,038 gastric specimens were received in the department during the period under study. Of these, 983 were endoscopic gastric biopsies while 55 were gastrectomy specimens. Only 107 specimens satisfied the inclusion criteria, had the complete data and were included in the study. Of these seventy-two (72) were endoscopic biopsies, while thirty-five (35) specimens were gastrectomy specimens.

Age and sex distribution of patients with gastric malignancies

Table 1 depicts the age and sex distribution of the patients with gastric malignancies while Table 2 shows sex incidence of the histogenetic types. The overall male to female ratio was 1.2:1 for all gastric malignancies and 1.1:1 for carcinomas. This reflects a slight male predominance. Gastric malignancies were seen in virtually all age groups. The youngest patient was 7 years old while the oldest was 80 years old. The mean age was 53.5 years. Most patients were between the ages 40 and 50 years. Tables 1 and 2 show the details of age and sex distributions. Most cases of gastric malignancies were seen from the fourth decade of life. Patients aged 40 - 79 years accounted for 84 (78.5%) of the 107 cases. The peak age range was 50 - 59 years, in which 35 cases were seen accounting for 32.7% of the total number of cases. Nineteen cases were males while 17 cases were females. Patients aged 0 - 29 years showed very low incidence of gastric malignancies accounting for just 5 (4.7%) cases of gastric malignancies. A male predominance was expressed in all age groups except for the fourth and seventh decades when there was a female predominance.

Topographical distribution of gastric malignancies

Table 4 shows the topographical distribution of gastric malignancies. The gastric antrum was found to be the

Table 3. Distribution of the five most common gastric carcinomas at OAUTHC, Ile Ife. Total no. of cases =102.

Age group	Tubula Adenoca.	Papillary Adenoca	Mucin Ca.	Sign Ca.	Poor Ca.	Total
0-9						
10-19	1					1
20-29	2		1			3
30-39	2	1	1	3	5	12
40-49	7	1	2		3	13
50-59	13	5	9	3	5	35
60-69	6	3	5	3	5	22
70-79	4	4	4		2	14
80-89	1	14	22	9	1	2
Total	36	13.7	21.6	8.8	21	102
%	35.3				20.6	100

Table 4. Topographical distribution of gastric malignancies seen at OAUTHC, Ile Ife.

Site	No of cases	% of total
Pyloric Antrum	102	95.33
Cardia	3	2.80
Corpus	1	0.93
Fundus	1	0.93
TOTAL	107	100

site for 102 (95.33%) cases, 3 (2.80%) cases were found in the gastric cardia and 1 case (0.93%) each was found in the corpus and in the fundus.

Histopathological subtypes of the gastric malignancies

Out of 107 cases of gastric malignancies, carcinomas accounted for 102 cases (95.3%), of which male and female cases were 54 (50.5%) and 48 (44.9%), respectively. The male : female ratio for carcinomas being 1.1:1. Three cases of sarcomas and two cases of lymphoma were seen, all these patients were males. Table 2 shows the distribution for gastric malignancies based on histopathological subtypes.

Carcinomas as the predominant histopathologic subtype

Carcinomas alone accounted for 102 cases or 95.3% of gastric malignancies. This shows that carcinomas were the most frequent gastric malignancies. Well and moderately differentiated adenocarcinomas accounted for 50 cases or 49% of gastric carcinomas. Of these, tubular adenocarcinomas are more common as they accounted

for 36 (35.3%) cases of carcinomas as against 14 (13.7%) cases of papillary adenocarcinomas found in this study. The mucinous and poorly differentiated carcinomas follow the well and moderately differentiated carcinomas, accounting for 22 (21.6%) and 21 (20.6%) cases of gastric carcinomas respectively. Signet ring carcinomas are the least common. They accounted for 9 (8.8%) cases of gastric carcinomas. There is a remarkable male predominance in all the gastric carcinomas except for the mucinous subtype in which the female cases almost doubled the male cases. Table 3 shows the distribution of the five commonest according to age and sex.

Incidental pathological findings in the biopsies of gastric malignancies

These included intestinal metaplasia, glandular atrophy, chronic gastritis and presence of *Helicobacter pylori.* Only the carcinomas were associated with incidental lesions.

Intestinal metaplasia

This was seen in 16% of cases. No cases of intestinal metaplasia were seen below 30 years of age. Six cases

Table 5. Incidental pathological findings in gastric malignancies seen at OAUTHC, Ile Ife.

Incidental findings	No. of cases (%)
Significant *H. pylori* infection *(Moderate to numerous)*	64(60)
Chronic gastritis	
Mild chronic gastritis	11(10)
Moderate chronic gastritis	75(70)
Severe chronic gastritis	16(15)
Indeterminate	5(5)
Glandular atrophy	
Mild Atrophy	5(5)
Moderate Atrophy	32(30)
Severe Atrophy	1(1)
Intestinal metaplasia	17(16)
Peptic ulcer disease	Nil

Table 6. Pattern of intestinal metaplasia.

Age(years)	Male	Female
0-9	-	-
10-19	-	-
20-29	-	-
30-39	2	-
40-49	2	-
50-59	4	2
60-69	1	1
70-79	3	1
80-89	1	-

Table 8. Pattern of glandular atrophy.

Age (years)	Glandular atrophy
0-9	-
10-19	-
20-29	1
30-39	1
40-49	2
50-59	15
60-69	14
70-79	4
80-89	1

Table 7. Distribution of chronic gastritis.

Age (years)	Chronic gastritis
0-9	-
10-19	-
20-29	4
30-39	4
40-49	8
50-59	33
60-69	10
70-79	21
80-89	-

years of age, 21 cases were seen between 70 and 79 years of age, 10 cases between 60 and 69 years, 8 cases between 40 and 49 years and 4 cases each in the 20 - 29 and 30 - 30 age groups. Table 7 illustrates the numbers of cases of chronic gastritis.

Glandular atrophy

Glandular atrophy was seen in 36% of cases. Most of the cases were seen between 50 and 59 years of age accounting for 15 cases, followed closely by 14 cases in the 60 - 69 years age group. Table 8 illustrates the number of cases of glandular atrophy.

H. pylori infection

Significant *H. pylori* infection was seen in 60% of cases. Half of the cases were seen between the 50 - 59 years of age. The number of cases of *H. pylori* Infection is illustrated by Table 5.

were seen between 50 - 59 years of age. The numbers of cases of intestinal metaplasia are illustrated by Table 6.

Chronic gastritis

Chronic gastritis was seen in 75% of cases. Thirty –three cases were seen to have gastritis between 50 and 59

Peptic ulcer disease

There were no cases of peptic ulcer disease.

DISCUSSION

Age and sex incidence

Arigbabu (1988) in Ile Ife, in his study of 57 patients between 25 and 76 years of age found a mean age of 53 years in his patients. He had the highest number of patients between 41 and 60 years of age. Arigbabu had no case of gastric malignancies between 0 and 20 years. He had 3 (5.3% between 21 and 30 years old, 5 (8.8%) between 31 and 40 years, 10 (17.5%) patients between 41 and 50 years, 17 cases (29.8%) between 51 and 60 years, 14 cases (24.6%) between 61 and 70 years and 8 cases (14%) between 71 and 80 years. The findings by Arigbabu and our findings showed a peak incidence in the sixth decade of life followed by patients in the seventh decade of life. His findings correlate well with our finding. Incidentally, Arigbabu did his study in the same location as ours but there was no histological sub-typing or topographical correlation. The similarity of research location probably explains the similarities seen in our findings. Also the findings give the impression that the pattern of gastric malignancies in the study environment had not changed significantly over time. Only five cases were seen before 30 years by Arigbabu which is in consonant with data from Fenoglio-Preiser et al. (2000) and Clark and Silk (2000) who in different series discovered that gastric malignancies and even carcinomas were rare before age 30 years. Milne et al (2006) in their series found less than ten percent of their cases occurring before the age of 45 years and also found out the disease mainly affects older patients.

Rosai appraised most patients with gastric carcinoma to be over 50 years of age (Rosai, 1996). The mean age of incidence according to Chen et al is 55 years for intestinal type gastric carcinomas but 48 years for diffuse type of gastric carcinomas (Chen and Crawford, 2005).

The findings by Badoe (1966) from the study of 67 cases showed that most cases occurred between 40 and 59 years of age. He showed that carcinomas were common in Ghana from 30 years of age onwards but had no cases below 20 years of age. His finding on carcinomas correlates well with our findings. Many of our cases were seen between 30 and 79 years. However in our own series, very few cases were seen as from the ninth decade of life. Badoe did not define this group as a distinct group in his study thus making comparisons between his study and our study in patients between 80 and 89 years of age difficult. Mabogunje and Lawrie (1979) in Zaria studied 62 cases between ages 27 and 70 years. He found that the peak age incidence was between 40 and 49 years.

Almost 60% of his cases were between the ages of 40 and 59 years. Our finding correlates well with Mabogunje's. This probably signifies that there is no significant variation between the pattern of occurrence for gastric carcinomas in South Western Nigeria and the north Central Nigeria.

Elebute et al. (1963) in studying 86 cases had his youngest patient being 25 years and the oldest being 80 years. He did not characterize his cases further based on peak incidence. However, he found that most of his cases occurred between 40 and 59 years of age, followed by 60 and 70 years. He found no cases below 20 years of age. Very few cases were seen after the eighth decade of life in his study series. Again, our findings correlated well with Elebute's findings. This similarity can also be explained by the fact that the catchment area of the study remains essentially the same. Mabogunje et al. (1978) in Northern Nigeria had a mean age of 45.2 years. The peak age incidence was 40 - 49 years of age, while the mean age incidence was 47.5 years for intestinal types and 43.8 years for diffuse types of gastric carcinoma. This mean age is lower when compared to the mean age in his study suggests that his patients were relatively younger than our patients, perhaps by 5 - 10 years of age. Another explanation could be that our patients presented much later than expected thus accounting for the significant variation in the mean age. Obekpa et al. (1994) working in the middle belt of Nigeria studied 50 cases. The age range was 24 - 70 years while the mean age was 51 years (Obekpa et al., 1994). It is possible that there is no significant variation between our cases and those seen in the middle belt of Nigeria. Takyi (1972) working in Accra, Ghana had an age range of 10 - 89 years. The incidence of carcinomas was found below 30 years. He found no cases between ages 0 - 9 years, had just two cases between 10 - 29 years of age. Most cases were found between 40 - 69 years. The average age was 55 years in Takyi's series. Takyi's findings correlate fairly well with our findings. Therefore considering Badoe's and Takyi's studies and comparing them with ours, it seems that there is similarity between the cases of gastric malignancies seen in our environment and Ghana. All the aforementioned studies are within West Africa. Thong-Ngam et al. (2001) in Thai had 119 patients over five years; 72 males (60.5%) and 47 females (39.5%). The male to female ratio was 1.5:1. Their patients had ages ranging from 22 - 91 years. The mean age was 60.2 years. Twenty of their patients (16.8%) were younger than 40 years. Malhotra (1967) in his studies in India found that the disease was most prominent in the age group 35 - 55 years in South India and between 45 - 55 years in North India. This indicates that the age of maximum incidence is a decade earlier among South Indians compared with North Indians. British studies on gastric cancers show significant difference from those highlighted among Africans and Asians. Ramesh et al. (1999) found a median age incidence of 68 years. The average age of incidence in

our study was 53.5 years this showing a significant difference from those of the studies carried out in Britain. Therefore considering all the age incidences mentioned above, gastric malignancies of which carcinomas constitute the highest number; they occur at least a decade later in Nigerians and West Africans than in Indians and Asians. They also occur a decade earlier the Europeans. The sex incidence generally shows a male predominance. In other studies such as was done by Elebute et al. (1963) in Ibadan, he found a Male: Female ratio of 2.6:1. Badoe (1966) found a Male: Female ratio of 2:1. Mabogunje et al. (1978) working in Northern Nigeria found a Male: Female ratio of 1.6:1. A year later Mabogunje and Lawrie (1979) found a slight reduction in the Male: Female ratio of 1.4:1 from their study in the same environment. The findings enumerated above show that there is a male predominance in the incidence of gastric malignancies, though significant male female ratio exists in different parts of the world. Fegnoglio-Presier et al. (2000), Clark and Silk (2000) and Chen and Crawford (2005) also consented to a male predominance. The findings enumerated above show that there is a male predominance in the incidence of gastric malignancies, though significant male female ratio exists in different parts of the world.

Topographical distribution of gastric malignancies

Elebute et al. (1963) reported 74% of cases in the pylorus, 12% in the lesser curvature, 7% in the cardia, 6% of cases in the fundus and corpus while a case involved the whole of the stomach. Obekpa et al. (1994) reported 80% in the cardia, 12% in the antrum, the whole stomach was involved in 4% of cases while the unspecified involved was 4%. Takyi (1972) found 50% in the pyloric antrum, 8.3% in the greater curvature, 2.1% in the cardia and 6.3% in the entire stomach while 33.3% was unspecified. Mabogunje and Lawrie (1979) reported 72% in antrum, 16% in the cardia, 10% in the corpus and 2% in the fundus. Arigbabu (1966) reported 66% cases in the antrum, 19% in the fundus and 15% in the body. Our findings show a high incidence in the antrum. Our finding of a great majority of gastric malignancies occurring at the pyloric antrum is similar to findings in related studies done by the aforementioned authors, except Obekpa's finding of 80% in the cardia as against 12% in the antrum (Obekpa et al., 1994). This was clearly at variance with our findings and the findings of other researchers. Thus most malignancies of the stomach, of which carcinomas form a large bulk, occur more at gastric antrum.

Macfarlane et al. (2000) established that while 60% of gastric carcinomas occurred in the pylori antrum, 25% of cases occurred in the fundus and cardia while 15% of cases occurred in the corpus or body. Fenoglio-Preiser et al. (2000) also listed the antro-pyloric region as the most frequent site for gastric malignancies of which the carcinomas form a major percentage. Similar comment was made by Chen and Crawford (2005) that most carcinomas of the stomach occurred at the antro-pyloric

region. Clark and Silk also affirmed that most gastric cancers occur in the antrum and are almost invariably adenocarcinomas (Clark and Silk, 2000).

Distribution of histopathologic subtypes

Chen and Crawford (2005) affirmed that carcinomas account for 90 - 95% of gastric malignancies, while lymphomas accounted for just 4% are carcinoids and mesenchymal tumours (including gastrointestinal stromal tumours, leiomyosarcoma and schwannoma) accounted for 3% and 2%, respectively. Elebute et al. (1963) reported that all the cancers were adenocarcinomas. The degree of differentiation and histopathological subtypes were not specified. Most of our cases were adenocarcinomas. In this respect, our findings correlate with Elebute's. Obekpa reported 88% adenocarcinomas, 6% as leiomyo-sarcomas, 4% as lymphomas and 2% as Kaposi's sarcoma (Obekpa et al., 1994). Our findings have some similarity with Obekpa's except that there are more cases of sarcomas and lymphomas. In Takyi's study series, 35.4% were adenocarcinomas. He did not specify the degree of differentiation. He also reported 41.7% as poorly differentiated adenocarcinomas, another 4.17% as leio-myosarcomas. 58.33% of his cases were said to be indeterminate (Takyi, 1972). It is however obvious that very few of his cases just as in our cases are sarcomas. Mabogunje and Lawrie (1979) reported 75.64% of adenocarcinomas. 75% of the adenocarcinomas were well or moderately differentiated accounting for 56.73% of all the cases studied. A quarter of the adenocarcinomas were poorly differentiated that is 18.9%. Thong-Ngam et al. (2001) revealed that of their cases in Thai; 91.6% were adenocarcinomas, 3.4% each were lymphomas and leiomyosarcomas. 2.56% of cases had non-Hodgkin's lymphoma and 1.28% had primary Hodgkin's disease of the stomach. 20.55% of cases were unreported (Thong-Ngam et al., 2001). The remarkably high incidence of adenocarcinomas correlates with our findings. Arigbabu found all cases to be adenocarcinomas. 73% were moderately and well differentiated adenocarcinomas. 27% were poorly differentiated carcinomas. Arigbabu's study was in a similar environment as ours (Arigbabu, 1988). It shows adenocarcinomas as the commonest forms of gastric malignancies. Though our findings also show other forms of gastric malignancies, there is no departure from the fact that adenocarcinomas are the commonest forms of gastric malignancies and that other histopathologic types such as sarcomas and lymphomas are infrequent compared with the adenocarcinomas.

The associated pathologies and premalignant lesions

Local literatures discussing the specific relationship of the incidental findings with gastric malignancies were not

seen during the course of study. All the local literature originated from general surgeons who seemed to be satisfied with the confirmation of their suspected cases as malignancies rather than further sub-classify them into potentially prognosticable subtypes or go the extra mile to mention associated or incidental pathologies. Even though 60% of our cases showed *H. pylori* infection, most of our cases show moderate infection. Worldwide, *H. pylori* are known to cause chronic gastritis. It is reputed to cause 80 - 90% of chronic gastritis (Sipponen and Price, 1996; Pretolani et al., 1996). Pretolani et al. (1996) posited that *H. pylori* infection is present in 90% of gastric lymphomas. Sipponen and Price (1996) also posited that *H. pylori* infection is associated with a six fold risk of developing Mucosa Associated Lymphoid Tissue (MALT) B-cell lymphoma compared with the non infected population. Cammarota et al. (1997) lent credence to these facts by demonstrating the regression of MALT lymphoma by eradication of *H. pylori.* Wotherspon (1994) also reported that low grade MALT lymphomas regress upon treatment of H. pylori while high grade lymphomas may be unresponsive. Thus the European literature emphasized an unequivocal causal relationship between *H. pylori* infection, chronic gastritis, glandular atrophy and intestinal metaplasia. For clarification, *H. pylori* infection sets the stage for the triads of chronic inflammation which consists essentially of persistent inflammation of chronic non specific gastritis, continuous tissue destruction as evident by glandular atrophy and concomitant attempts at repair as evident by glandular regeneration and metamorphosis to intestinal type epithelia as a form of adaptation mechanism. The initial response of *H. pylori* is to precipitate an acute infection which is unresolved and keeps flaring since the injurious agent is persistent and so quickly turns into a chronic non specific gastritis. The inflammatory cells cause destruction of the gastric glands thus precipitating glandular atrophy. Glandular atrophy also sets the stage for hypochlorhydria or achlorhydria. Thus there is precipitation of high intra-gastric pH that allows the growth of bacteria that reduce dietary nitrate to nitrite and then convert dietary amines in the presence of this nitrite into carcinogenic N-nitroso compounds especially nitrosamines. Gastric cancer is accompanied by hypochlorhydria in 85 to 90% of cases. Surviving bacteria in hypochlorhydria stomach with low gastric secretion with resultant pH greater than 5 allows nitrates and nitrites to form nitrosamines. There are subsequent attempts at focal regeneration of glandular epithelia with changes to adapt to intestinal type epithelia that is to induce intestinal metaplasia of the gastric epithelium. This then sets the stage for dysplasia and subsequent cancer development. Sipponen posited that there is an eighteen-fold risk of developing gastric cancer in patients with *H. pylori* infection in the presence of severe antral atrophy, pan gastric atrophy and intestinal metaplasia. He however failed to mention the relative role played by each of the pre-malignant conditions in the case of gastric cancers that he studied. Other authors also believe that intestinal

metaplasia is epiphenomenal to the development of gastric cancers (Dixon et al., 1996; Fenoglio-Preiser, 1998; Filipe et al., 1994). Sugimura et al. (1982) in his study of 300 resected stomachs bearing gastric cancers found 90% of his cases arising from areas of intestinal metaplasia in the stomach. Considering the importance of the incidental pathologies in the development of gastric cancers in Caucasians, our cases of gastric malignancies especially the carcinomas show some significant relationship to these precursor lesions.

Conclusions

Carcinomas account for the highest number of gastric malignancies as seen in other studies in different countries of the world. They are associated with increasing age. The most common location of malignant conditions of the stomach is the gastric antrum. Precursor lesions of gastric cancers such as chronic gastritis, glandular atrophy, intestinal metaplasia, *H. pylori* infection are common and play a significant role in the development of gastric malignancies especially gastric carcinomas in our environment.

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