Upper Gastrointestinal Disease in Nairobi and Nakuru Counties, Kenya; A Two Year Comparative Endoscopy Study

Makanga W [1], Nyaoncha A [2]

1. Surgery Department, St Mary's Mission Hospitals
2. Aga Khan University Hospital, Nairobi

***Correspondence to*:** Dr. Winston Makanga. P.O Box 168-20116 Gilgil, Kenya. Email wmakanga@yahoo.com

Abstract

Introduction: Upper gastrointestinal (UGI) complaints are a common presentation in many outpatient clinics. St Mary's Mission Hospitals run two endoscopy units in Nairobi and Nakuru. The pattern of upper GI disease around Nakuru has not been studied in region before. We audited the pattern of upper GI disease in patients undergoing upper GI endoscopy (UGIE) in both centres and assessed the scope of interventional endoscopic procedures. **Methods**: A two year retrospective study of all diagnostic and interventional UGIEs done at both units from December 2011 to August 2013. **Results**: A total of 6,110 (5,948 [97%] were diagnostic) patients underwent UGIE in both centres. The age range was 6- 92 (a mean of 44) years. The male to female ratio was 1:1.14. Of the diagnostic UGIEs, normal findings were found in 2,081 patients (35%). Gastritis was reported in 1,560 patients (26%), duodenal ulcer in 594 patients (10%), GERD/esophagitis in 137 patients (2%) and gastric ulcer in 312 patients (5%). Tumors composed of 507 cases (8.5%); esophageal tumors were 342, gastric tumors were 98 and gastroesophageal junction tumors were 67. Significant differences in the two centers were in gastritis, hiatus hernia, esophageal varices, gastric ulcer and esophageal cancer. A total of 152 interventional UGIEs (86% palliative stenting) were done. **Conclusion**: The pattern of disease mirrors that in previous studies with a predominance of gastritis as the major upper gastrointestinal morbidity. Esophageal varices, benign gastric ulcers and esophageal tumors show a significant difference between the two centres.

Key Words: Endoscopy, Peptic, Ulcer, Dyspepsia

Introduction

Upper gastrointestinal complaints are a common presentation in many outpatient clinics. These complaints range from epigastric pain, bloating, heartburn (these three in various combinations are conventionally known as dyspepsia), vomiting, dysphagia, odynophagia and hematemesis. Endoscopy is key to diagnosis and in some cases, management of many of these conditions(1). Save for hepatobiliary disease, whose diagnosis mainly relies on ultrasound, most other upper gastrointestinal morbidity are diagnosed endoscopically. St. Mary's Mission Hospitals in Nairobi and Nakuru run outpatient clinics which serve as the main referring points for the two endoscopy units. In Elementaita, Nakuru, the patients mainly come from Nakuru County but we receive patients from neighbouring regions. The epidemiology of upper gastrointestinal disease has not been studied before; The closest studies done are in Nairobi (KEMRI) and Eldoret at the Moi Teaching and Referral Hospital (2,3). Our patients are likely to partly reflect the morbidity pattern of these diseases in this hitherto unstudied population.

The St Mary's Hospital in Nairobi has the main catchment area of the lower middle class of the southern part of the capital city and the surrounding regions. Several studies (3–5) have assessed upper GI morbidity in Nairobi, but these endoscopic studies are over a decade old and may not be reflective of the current disease pattern. Upper GI disease (especially peptic ulcer disease) is correlated with lifestyle (6,7) and with the significant changes seen over the decade in Nairobi (so called the rise of Nairobi's middle class), a

closer examination of this disease trends and pattern is necessary. We also sought to identify any significant differences in disease patterns in these two regions.

Methods

A retrospective review of all upper gastrointestinal endoscopies (UGIE) performed in the two units from December 2011 to August 2013 (total of 21 months) was done.

Endoscopies were performed by two general surgeons (one is the author) in Nakuru and three general surgeons in Nairobi using the Olympus ™ EVIS ™ CF 100TL video-endoscope. Prior 6 hour fasting and informed verbal consent were mandatory for all patients. Oropharyngeal local anaesthetic (10% Xylocaine Pump spray – Astra Zeneca) was used for almost all patients with the exception of those unwilling or too uncooperative to tolerate local anaesthesia. The latter patients were sedated with Ketamine – calculated by weight (1-2 mg/kg). Findings at endoscopy were recorded as per the gross description and biopsies were taken when necessary. No histological terminology especially for tumors was used even when visual inspection was classical for probable malignancy (hence the use of the word 'tumor' rather than cancer). Ulcers were described thus and classified as ulcers when they did not have raised edges or central necrotic or friable tissue that would otherwise lead us to classify it as tumor (pending histological analysis).

Patient's age, sex and findings on endoscopy or type of intervention were sequentially recorded in a register and later transferred to a spreadsheet (Microsoft Excel 2007) for descriptive analysis. Records of patients' age were incomplete. Comparison of proportions of findings were done and significance was computed by the Z test with a p value of <0.01 considered significant.

Results

In the period of December 2011 to August 2013, a total of 6,110 patients underwent UGIE at St Mary's Hospitals in Nairobi and Nakuru. Nakuru had 2,936 patients while Nairobi had a total of 3174 patients. The indication for the UGIE included dyspepsia, hematemesis, dysphagia, follow-up for varices and suspected malignancy (from prior studies e.g. barium studies). Table 1 shows a summary of the main findings.

Nakuru

The age range was 6 to 92 years, with a mean of 42 years. The males were 1,372 and females were 1,564 with a male to female ratio of 1:1.14. The UGIE was reported normal in 1,058 patients (36%). Gastritis was reported in 962 patients (33%), duodenal ulcer in 280 patients (9.5%), GERD/esophagitis in 64 patients (2.2%) and gastric ulcer in 54 patients (1.8%). Tumors composed of 220 cases (7.5%); esophageal tumors were 125, gastric tumors were 56 and gastroesophageal junction tumors were 39. Other pathologies found at endoscopy were eight cases of gastric polyps, six cases of upper GI bleeding of unknown origin, four cases of laryngeal tumor, two cases of Kaposi's sarcoma, six cases of benign esophageal stricture and four cases of benign esophageal ulcers.

Nairobi

Of the 3147 studied, the male to female ratio was 1:1.3 with an average age of 47, and a range of 10 to 92 years. The UGIE was reported normal in 1,023 patients (34%). Gastritis was reported in 598 patients (20%), duodenal ulcer in 314 patients (9.8%) and GERD/esophagitis in 73 patients (2.4%). Gastric ulcer was found in 258 patients (8.5%). Neoplasms composed of 287 cases which comprised 9.4% of upper GI disease burden. Esophageal tumors were 217 (7%) twice that in Nakuru, gastric tumors were 42 (1%) and gastroesophageal junction tumors were 28 (1%).

Interventional UGIEs

The commonest endoscopic interventions were esophageal tumor stenting with self expanding metal stents (SEMS). One hundred of these were done in Nairobi and 30 in Nakuru. Twenty of the UGIEs done in Nairobi and 12 in Nakuru were for complicated stents ranging from tumor overgrowth, blockage or stent migration. Other procedures included unblocking of SEMS stents (10 cases), foreign body removal (3 cases), injection of sclerosing agents (6 cases) and/or banding for varices (3 cases).

Table 1. Table of UGI morbidity

	Nakuru	Percentage	Nairobi	Percentage	P value
Normal	1058	37%	1023	34%	0.0134
Gastritis	962	33%	598	20%	<0.0002
Esophagitis/GERD	64	2%	73	2.4%	0.6455
Duodenitis	56	1.9%	88	2.7%	0.0176
Duodenal ulcer	280	9.5%	314	9.8%	0.4354
Gastric ulcer	54	1.9%	258	8.5%	<0.0002
G.O.O	53	1.8%	35	1.2%	0.0223
Esophageal tumor	125	4.3%	217	7.1%	<0.0002
Gastric tumor	56	1.9%	42	1.4%	0.0901
G.E.J tumor	39	1.4%	28	0.9%	0.1155
Esophageal candidiasis	75	2.6%	88	2.9%	0.494
Hiatus hernia	15	0.5%	156	5%	<0.0002
Esophageal varices	19	0.66%	63	2%	<0.0002

P 0.01

Table 2. Endoscopic interventions done at both centres

	Nakuru	Nairobi
Stenting (SEMS)	30	100
Variceal injection	6	0
Variceal banding	3	0
FB removal	2	1
Stent unblocking	10	0

Table 3. Comparative findings of percentage UGI diseases in regional and international studies.

Author & year	n	Normal	Gastritis	DU	GU	Esophageal tumor	Gastric tumor
Misallek 1991 (1)	4000	30	11	22	NR	4	5
Ayuo 1994 (2)	45	60	NR	20	8.9	NR	NR
Quine* 1994 (18)	1306	52	0.9	7	1.9	0	0
Ogwang 2003 (10)	307	29	19	18	0.01	0.02	0.01
Lodenyo 2005 (3)	768	11	25.8	7.8	1.3	8.5	4.5
Chagaluka 2009 (11)	441	24	10	1.4	NR	28	1.4
Suleiman* 2010 (14)	1607	14	42	15	0.7	?4	?4
Current Study	**6110**	**35**	**26**	**10**	**5**	**6.9****	**1.7**

**Studies done outside the East African region*
***Both esophageal and gastroesophageal junction tumors*

Discussion

Our audit reports endoscopic findings of a heterogenous population with various indications for endoscopy and it is one amongst a growing number of UGIE audits done in this region and in Africa(1–3,8–11). This study gets its strength in its large number of patients. Studies by Missalek et al (Tanzania), Ogwang et al (Uganda), Lodenyo et al (Nairobi, Kenya), Ayuo et al (Eldoret, Kenya) have evaluated the UGI disease burden albeit with relatively smaller numbers(1–3,10). Only Missalek had 4000 patients. In addition, no study has been done around the Central Rift region in Kenya. We offer the first audited glimpse of these diseases and their pattern.

Gastritis is understandably a common endoscopic diagnosis due to its loose usage, particularly at endoscopy when any redness of the gastric mucosa may be described as 'gastritis'(12). Our study finding of 35% is similar to other centres regionally which report figures of 25% (Lodenyo), 21% (Al-Quorain), 42% (Suleiman)(13,14). The abnormal high prevalence of gastritis in many of these studies, including ours, likely has ubiquitous etiogenesis and should be treated more as a sign rather than a definitive disease. Histological confirmation was not done in most of our cases.

Ulcer disease i.e. duodenal and gastric ulcer – both etiologically related to mainly H. pylori and NSAID use had disparate frequencies. Duodenal ulcer rate of 9.5% is similar to Suleiman's 15% and Ludenyo's 7.8% (3,14). Ayuo recorded a high peptic ulcer rate of 39.9% but his study population was restricted to patients with dyspepsia as compared to ours which was inclusive of all UGIEs (2). Gastric ulcers are much rarer both in our study and others done regionally and worldwide. A finding of 1.8% in our study is similar to that available in regional studies ranging from 1.7-1.9% (1,4,10). This goes on to support that this is a rare disease especially in the black population. The DU:GU ratio in our study at the Nakuru site was 5:1, almost similar to what Lule et al showed (7:1) in 1987 in a study of patients with PUD at the Kenyatta National Hospital (4). Among our patients in the Nairobi site, the ratio was 1:1; The only explanation for such a difference would be either in study design or patient selection.

The study offers a mix of conclusions drawn from earlier studies and new insights to malignancies. We found that upper gastrointestinal tumors affected 11% of our patients. Anecdotal data suggests a steep rise of upper GI tumors in the country; our study was in support of this number with a high percentage of esophageal tumors at 8.8% (combined esophageal and gastroesophageal tumors). Kenya has regional difference in the esophageal cancer rate with high pockets in North Rift Valley (around Eldoret, Nandi, Kericho and Bomet) and parts of Western province(15–17). These regions constitute a catchment area for St Mary's Hospital in Nakuru and hence may explain the high prevalence in our endoscopy population.

A normal finding in 35% of patients is significantly higher than other studies done regionally and elsewhere. Most other studies report a normal finding ranging from 11% (Lodenyo) to 60% (Ayuo). Centers where there is a very high 'normal' rate suggest poor patient selection for this procedure. We have experienced this in our centre, where junior clinicians may injudiciously order a UGIE as a first investigation without clear indication for doing so. Another possible explanation for this is the inability of UGIE's to conclusively diagnose some conditions of the upper GI tract e.g. gall bladder disease which may have an identical presentation of dyspepsia. Tied to this is the similarity of other systemic or neuropsychiatric diseases with similar presentation to upper GI disease. An example is myocardial ischemia which may present with burning retrosternal pain.

Conclusion

The study offers an insight into upper GI disease around the central rift and Nairobi region. It mirrors findings of earlier studies but shows a trend towards increasing upper GI tumors. This study forms a basis of future studies to specifically look into UGI malignancies.

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