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UPPER GASTROINTESTINAL ENDOSCOPY FINDINGS IN PATIENTS REFERRED WITH UPPER GASTROINTESTINAL SYMPTOMS IN ELDORET, KENYA: A RETROSPECTIVE REVIEW

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UPPER GASTROINTESTINAL ENDOSCOPY FINDINGS IN PATIENTS REFERRED WITH UPPER GASTROINTESTINAL SYMPTOMS IN ELDORET, KENYA: A RETROSPECTIVE REVIEW

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ABSTRACT

Background: Dyspepsia is one of the major indications for upper gastrointestinal endoscopy. Other indications include dysphagia, odynophagia and gastrointestinal bleeding. Endoscopy is an expensive procedure that is out of reach of many patients in resource constrained region such as western Kenya. We reviewed endoscopy records from both public and private health institutions spanning ten years.

Objective: To determine the pattern of referral and endoscopy diagnoses in patients referred for upper gastrointestinal endoscopy in Eldoret, Kenya.

Design: Retrospective chart review.

Setting: Moi Teaching and Referral Hospital, private hospitals and private clinics in Eldoret, Kenya

Subjects: One thousand six hundred and ninety (1690) Patients who underwent upper GI endoscopy from 1993 to 2003 were reviewed after obtaining clearances from the respective institutions. Information on age, sex, symptoms, and endoscopy diagnosis were extracted and subjected to statistical analysis.

Results: The most common symptom was dyspepsia in 1059 (62.7%) followed by dysphagia in 224 (13.3%). Others were referred with diagnosis of cancer of the stomach or oesophagus. Common endoscopy diagnoses were cancer of the oesophagus in 199 (11.8%) and duodenal ulcer in 186 (11.0%). The majority of the patients (30.4%) had normal endoscopy findings. Of the 1059 patients with dyspepsia, only 154 (14.5%) had duodenal ulcer and 34 (3.2%) had gastric ulcers, the majority, 37.2% had normal endoscopy findings.

Conclusion: Dyspepsia was main reason for referral, but the majority of such patients had normal findings. Cancer of the oesophagus was the main diagnosis in patients with dysphagia. In view of the cost of endoscopy, only those with dyspepsia and alarm symptoms be referred for the procedure.

INTRODUCTION

The first gastroscopy in 1868 is credited to Kussmaul (1). This was followed in the 1920s by the conceptualisation of image transmission using flexible quartz fibers a concept used by Hopkins in 1954 to build a model of a flexible fibre imaging device (2) the precursor of fibre-optic endoscope. Since then endoscopes and endoscopy have undergone great technical developments to the current new dimension in imaging of endoscopic ultrasonography (EUS) by combining ultrasonography and endoscopy (3). These developments have enhanced the safety and diagnostic yield of endoscopy as well as providing

therapeutic options making upper gastrointestinal endoscopy (UGIE) the most accurate and cost effective tool for evaluating patients with gastrointestinal related symptoms (4). Thus UGIE has become an established mode of investigation with added opportunity for treatment of a wide range of upper gastrointestinal conditions and biopsy of lesions for diagnosis (5).

Upper gastrointestinal (UGI) diseases are leading causes of morbidity and mortality globally. One of the major indications UGIE is dyspepsia. Dyspepsia is described as, a common symptom, that may be caused by a variety of conditions such as peptic ulcer disease (PUD), gastro-oesophageal

reflux (GORD) and malignancy (6, 7) among others. Other indications are dysphagia, odynophagia and gastrointestinal bleeding (7). UGIE has been found to be both effective and a safe procedure that can be performed at large medical centres, small rural hospitals, outpatient clinics or even private offices (7).

Upper GI endoscopy (UGIE) was introduced in Eldoret in the early 1990's (8), since then many patients have undergone the procedure, mainly for diagnostic purposes. However, the cost of the procedure is high and out of reach of many patients. We therefore, reviewed endoscopy records to provide information on clinical indications for the procedure to guide care and inform referral of patients with GI symptoms by the care providers. The objectives of this study were, first, to describe the age and sex distribution of patients referred for UGIE and secondly, to determine the pattern of referral indications and endoscopy diagnoses.

MATERIALS AND METHODS

In this retrospective study we analysed the data from the records of patients who underwent upper GI endoscopy during ten years from May 1993 to April 2003. All available records from both private and public services were studied and information regarding age, sex, symptoms, endoscopy diagnosis extracted and entered into a special data form before being entered into a computer by a trained research

assistant. Patients who underwent endoscopy more than once for the same complaint without intervening symptom-free period, were counted only once. The procedures were performed using either video-scope or flexible fibre-optic upper GI scope.

SAS and Stata statistical software were used for data handling and analysis. Means and proportions were calculated to describe the subjects.

Ethical considerations: To ensure confidentiality patient initials and a unique study number were used during data extraction. This study was approved by Moi University School of Medicine (MUSOM) and Moi Teaching and Referral Hospital (MTRH) Institutional Research and Ethics Committee (IREC) as well as the administration of MTRH and the other institutions where patients underwent endoscopy.

RESULTS

One thousand six hundred and ninety (1690) patients aged between 80 and 100 years (mean 45.9 ± 18.9 , median 44 years) were referred and underwent upper GI endoscopy in the referral hospital (24.9%), private hospitals (0.4%) and private clinics (74.8%) in Eldoret, Kenya during the period under review. They comprised 864 (51%) males; mean age 45.9 ± 19.2 (median 44.0 and range 12 to 100) years and 826 (49%) females; mean age 45.9 ± 18.7 (median 44.0 and range 8 to 100) years. Age and sex distribution is shown in Table 1.

Table 1
Age and sex distribution of 1690 patients

Age groups	Male N (%)	Female N (%)	Total N (%)
=<25	142 (16.4%)	132 (16.0%)	274 (16.2%)
26-35	161 (18.6%)	155 (18.8%)	316 (18.7%)
36-45	155 (17.9%)	141 (17.1%)	296 (17.5%)
46-55	128 (14.8%)	114 (13.8%)	242 (14.3%)
56-65	120 (13.9%)	133 (16.1%)	253 (15.0%)
>65	158 (18.3%)	151 (18.3%)	309 (18.3%)
Total	864	826	1690

The most common symptom for referral was dyspepsia seen in 1059 (62.7%) of the patients, followed by dysphagia in 224 (13.3%). Others were referred with diagnosis of cancer of the stomach or oesophagus. (The frequencies of symptoms for referral are shown (Table 2).

Table 2
Reasons for referral (endoscopy)

Reason for referral (clinical diagnosis)	Males n (%)	Females n (%)	All N (%)
Dyspepsia	505 (58.4)	554 (67.1)	1059 (62.7)
Heart burn	11 (1.3)	17 (2.1)	28 (1.7)
Vomiting	37 (4.3)	41 (5.0)	78 (4.6)
Combination	3 (0.3)	3 (0.4)	6 (0.4)
Ca oesophagus	42 (4.9)	19 (2.3)	61 (3.6)
Ca stomach	44 (5.1)	37 (4.5)	81 (4.8)
Unclear reasons	34 (3.9)	17 (2.1)	51 (3.0)
Vomiting blood	65 (7.5)	37 (4.5)	102 (6.0)
Dysphagia	123 (14.2)	101 (12.2)	224 (13.3)
Total	864	826	1690

Common endoscopy diagnoses were cancer of the oesophagus reported in 199 (11.8%) followed by duodenal ulcer in 186 (11.0%) of the patients. Majority 513 (30.4%) had normal endoscopy findings (Table 3).

Table 3
Endoscopy diagnoses

Diagnosis	Males n (%)	Females n (%)	All N (%)
Duodenal ulcer	116 (13.4)	70 (8.5)	186 (11.0)
Gastric ulcer	29 (3.4)	23 (2.8)	52 (3.1)
Duodenitis	42 (4.9)	43 (5.2)	85 (5.0)
Gastritis	70 (8.1)	72 (8.7)	142 (8.4)
Combination	27 (3.1)	21 (2.5)	48 (2.8)
Ca oesophagus	113 (13.1)	86 (10.4)	199 (11.8)
Ca stomach	42 (4.9)	26 (3.1)	68 (4.0)
Normal	213 (24.7)	300 (36.3)	513 (30.4)
Reflux oesophagitis	66 (7.6)	67 (8.1)	133 (7.9)
Bile reflux	38 (4.4)	34 (4.1)	72 (4.3)
Pyloric stenosis	10 (1.2)	05 (0.6)	15 (0.9)
Deformed duodenal bulb	17 (2.0)	10 (1.2)	27 (1.6)
Oesophageal varices	28 (3.2)	06 (0.7)	34 (2.0)
Others*	53 (6.1)	63 (7.6)	116 (6.9)
Total	864	826	1690

* Others included: oesophageal candidiasis, oesophageal stenosis and other non specific conditions.

Among the 1059 patients referred with dyspepsia, only 154 (14.5%) had duodenal ulcer, 34 (3.2%) had gastric ulcers and majority 37.2% had normal endoscopy findings. Loglinear regression model (analysis) was used to determine the interaction of reason for referral and endoscopy diagnosis. The interaction of each of all the levels and their associated p-values

were obtained (Table 4). It is noted that dyspepsia as a reason for endoscopy is significantly associated with duodenal ulcer and cancer of oesophagus ($p < 0.0001$). It is also associated with gastric ulcer ($p = 0.0011$). Dysphagia is also significantly associated with cancer of oesophagus ($p < 0.0001$) and duodenal ulcer ($p = 0.0004$).

Table 4
Relationship between endoscopic diagnosis and reason for referral

Reasons for Endoscopy	Endoscopic Diagnosis									
	Frequency Row	Duodenal Ulcer	Gastric Ulcer	Duodenitis	Gastritis	Combination	Ca oesophagus	Ca stomach	Normal	Other*
Dyspepsia	154	34	77	92	39	13	19	394	237	1059
	14.54 0.0011	3.21 0.9532	7.27 0.0097	8.69 0.0566	3.68 0.0001	1.23 0.2646	1.79 0.0023	37.20 0.0001	23.38	
Heart burn/reflux	3	1	0	1	0	1	0	12	10	28
	10.71 0.0341	3.57 0.7693	0.00	3.57 0.8957	0.00	3.57 0.0015	0.00	42.86 0.3905	35.71 0.0065	
Vomiting	3	1	2	19	3	7	7	16	20	78
	3.85 0.11660	1.28 0.3567	2.56 0.2449	24.36 0.0002	3.85 0.1160	8.97 0.0001	8.97 0.1372	20.51 0.9770	25.64 0.0235	
Combination	1	0	0	1	1	0	0	1	2	6
	16.67 0.0534	0.00	0.00	16.67 0.2665	0.00 0.0634	0.00	16.67	33.33 0.7130	0.6518	
Ca oesophagus	0	1	0	2	0	40	5	6	7	61
	0.00	1.64 0.9837	0.00	3.28 0.3340	0.00	65.57 0.1390	8.20 0.0253	9.84 0.8933	11.48 0.0824	
Ca stomach	4	4	1	12	1	4	25	14	16	81
	4.94 0.0399	4.94 .4107	1.23 0.4936	14.81 0.0022	1.23 0.4936	4.94 0.0001	30.86 0.0001	17.28 0.8146	19.75 0.0191	
Unclear	3	0	1	4	1	1	2	23	16	81
	5.88 0.0798	0.00	1.96 0.4936	7.84 0.2957	1.96 0.4936	1.96 0.0002	3.92 0.8991	45.10 0.1334	31.37 0.0003	
Vomiting Blood	17	5	3	6	2	6	4	13	46	102
	16.67 0.0085	4.90 0.6971	2.94 0.3798	5.88 0.8579	1.96 0.6147	5.88 0.0001	3.92 0.4864	12.75 0.0082	45.10 0.0082	
Dysphagia	1	6	1	5	1	127	6	34	43	224
	0.45 0.0004	2.68 0.2573	0.45 0.0860	2.23 0.0963	0.45 0.1917	56.70 0.0001	2.68 0.4420	15.18 0.0082	19.20 0.0082	
Total	186	52	85	142	48	199	68	513	397	1690

*includes: Reflux oesophagitis, Duodeno-gastric (bile) reflux, pyloric stenosis, deformed duodenal bulb, oesophageal varices, oesophageal candidiasis, oesophageal stenosis and other non specific conditions.

DISCUSSION

This study has demonstrated that dyspepsia is the commonest indication for endoscopy in this cohort of patients, followed by dysphagia. We found that 62.7% of the patients were referred because of dyspepsia, a finding which is in agreement with other published findings. Taye *et al.* (9) in a review of 10,000 endoscopies in Ethiopia between 1979 and 1994 showed that 59.4% were referred because of dyspepsia, whereas in Nigeria in 2009, 61% of patients undergoing endoscopy had dyspepsia (10). Given that dyspepsia as reflected by the number of different definitions in common usage and therefore lack of standardisation of the definition especially in retrospective reviews, these comparisons should be treated with caution. In addition, some reviewers have considered epigastric pain as a separate symptom from dyspepsia. For example, Adful *et al.* (11) in a retrospective and prospective audit of all upper gastrointestinal endoscopies performed at the Korle-Bu Teaching Hospital, Accra, Ghana, involving 6,977 patients reported that epigastric pain was the leading symptom indication for endoscopy in 42.5% followed by dyspepsia in 32.8%. The prevalence of dyspepsia in scoped patients can partly be explained by the fact that the prevalence of dyspepsia in the general population is as high, estimated at about 40% (12). Generally, our findings are consistent with the concept that dyspepsia calls for various upper gastrointestinal pathology that can only be differentiated by upper gastrointestinal endoscopy among other sophisticated and expensive tests. It should also be appreciated that our clinicians who refer patients are alive to the utility of upper gastrointestinal endoscopy in the evaluation of patients with dyspeptic symptoms. This could explain the high rate of negative endoscopy findings in the patients.

Other indications for endoscopy particularly dysphagia vary mostly according to age and geographical regions. We found dysphagia to be the second, though distant, most frequent reason for endoscopy accounting for 13.3%. Whereas many studies on upper gastrointestinal endoscopy on dyspeptics have not included dysphagia possibly because of the rarity of cancer of the oesophagus in their settings or younger age group of the patients studied, in the study by Adful *et al.* (11) with comparable mean age (43.6 years) to our patients, dysphagia accounted for only 1.7% of the referrals. However, their cohort had a mono-modal peak age at 30 – 39 years. Among Ethiopian patients who

were younger (mean age 36 years) only 2.2% were referred because of dysphagia (9) indicating that the prevalence of dysphagia as a symptom seems to increase with age. Most patients with dysphagia (56.7%) in our cohort were diagnosed at endoscopy to have cancer of the oesophagus. Our patients, who on average were young (mean age 45.9 ± 18.9 years), had a bimodal age distribution peaking at 26 – 35 years (18.7%) and >65 years (18.3%). This possibly accounted for the high prevalence of cancer of oesophagus among those with dysphagia because of universal age distribution of this cancer, Kenya being one the high cancer of oesophagus areas (13).

Normal findings were found in the majority (30.4%) of the patients. This is not surprising as the prevalence of non-ulcer dyspepsia has been reported to be high (14). It can therefore be argued that the prevalence of normal endoscopy findings in symptomatic patients parallel that of non ulcer dyspepsia. This view is supported by many publications reporting consistently high prevalence of between 41 to 52% of normal endoscopy findings among different populations and age groups (11, 15, 16). That the majority of patients undergoing upper gastrointestinal endoscopy have normal result should be of concern as argued by proponents of health cost reduction. Endoscopy is an expensive investigation (17) to both patient and hospital. Those who belong to this school of thought pose that to reduce the cost of managing dyspeptics, and added to the fact that some studies have demonstrated that endoscopy does not change the outcome in patients with dyspepsia, endoscopy should be reserved for the high risk patients or those with alarm symptoms (18). These arguments are borne out by McCormick *et al.* (19) who reported that between 1991 and 1992, the direct costs of managing dyspepsia totalled £130 million for endoscopies per year in the UK.

The world over, peptic ulcer disease (PUD) is one of the major diagnoses made on patients with dyspepsia. Among our cohort duodenal ulcer was diagnosed in 11.0% and Gastric ulcer in 3.1% only. However, among the subset with dyspepsia 14.5% had DU and 3.2% GU. Our findings are at variance with those from other countries. The prevalence of PUD vary from place to place, as *H. pylori*, which is currently recognised as the cause of the majority of PUDs, occur with different frequencies in various geographical areas. In Accra Ghana (11) chronic duodenal ulcer is seen in 19.6% whereas, UK patients with dyspepsia have odds of 27.2 of having PUD (20). In one study from India DU was seen in only 10.9% (21). Prevalence of *H. pylori* has been reported by various workers to be decreasing, most markedly in the developed countries. Thus the prevalence of PUD will also be lower in these countries compared to developing countries. However, *H. pylori* still remains the main risk factor for PUD globally (22, 23). Sung

et al. (23) in a systematic review of several studies reported that one study from Canada involving 1040 patients found 5.3% prevalence of PUD and another from Sweden 4.1%. Apart from *H. pylori*, data on prevalence of PUD may vary based on demographic differences between populations studied and the definition of dyspepsia as used by the researchers. In this review, *H. pylori* testing was not done in any of the patients.

All the patients were referred for upper gastrointestinal endoscopy with various symptoms. Slightly below a third of all patients (30.4%) had normal upper gastrointestinal findings at endoscopy. This means that symptomatology alone may not be an accurate predictor of upper gastrointestinal endoscopy finding. This argument is supported by the report of Agbakwuru *et al.* (24) that only 33.9% of 67.6% of clinical PUD diagnosis had PUD, a positive predictive value of 36%. Similarly, Kolk (16) found an odds of 3.3 (95%CI; 1.7 – 8.1) for PUD using logistic regression analysis of 172 patients referred for endoscopy with dyspepsia. These data suggest that treating PUD should not rely on symptoms, even though for reasons we may not be able to explain, our Loglinear regression model results suggest otherwise. However, dysphagia and clinical diagnosis of Cancer of oesophagus are much more predictive of endoscopy diagnosis ($p < 0.001$).

LIMITATIONS

This study relied on single observer, the endoscopist, for diagnosis as recorded in the charts, whereas, the accuracy of endoscopy diagnoses is known to be dependent on the experience of the endoscopist. Endoscopy is an expensive procedure thus most patients cannot access. Hence our results may not stand the test of generalisation, as only those who could pay underwent the procedure.

CONCLUSION

Patients referred for upper GI endoscopy during the period under review represented all age groups with median of 44 years. They comprised almost similar numbers of males and females.

The main reason for referrals for endoscopy was dyspepsia, however the majority of such patients had normal findings. Dysphagia had a significant predictive relationship with cancer of the oesophagus.

RECOMMENDATION

We recommend that patients with dyspepsia in low-resource settings should be thoroughly scrutinised and only those at high risk and/or with alarm symptoms should be subjected to endoscopy.

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