Upper gastrointestinal endoscopy in the patient population of Kumasi, Ghana: Indications and findings

Adam Gyedu1,2, Joseph Yorke1,2

1School of Medical Sciences, Kwame Nkrumah University of Science and Technology, Kumasi, Ghana, 2Directorate of Surgery, Komfo Anokye Teaching Hospital, Kumasi, Ghana

Corresponding author: Adam Gyedu, Department of Surgery, School of Medical Sciences, Kwame Nkrumah University of Science and Technology, Kumasi, Ghana

Key words: Upper gastrointestinal, endoscopy, Kumasi

Received: 13/06/2014 - Accepted: 13/08/2014 - Published: 25/08/2014

Abstract

Introduction: Characteristics of patients undergoing Upper GI endoscopy (UGIE) in Kumasi, Ghana are largely unknown. This paper reviews the work of three endoscopy units in Kumasi. Methods: A review of the records of patients undergoing diagnostic UGIE in the three centers from October 2006 to December 2011 was undertaken. Results: 3110 completed UGIE were performed over the period. In 80% of the patients the primary indication for UGIE was dyspepsia occurring without any other symptom. In 50% of patients UGIE findings were normal. Peptic ulcer disease, the most common positive finding, was diagnosed in 27.4% of patients. The odds ratio (O.R) of yielding a positive endoscopic finding for patients presenting with recurrent vomiting, dyspepsia associated with weight loss and UGI bleeding were 3.87 (95% C.I: 2.23-6.69), 1.72 (95% C.I: 1.03-2.87) and 1.81 (95% C.I: 1.03-3.16) respectively. Dyspepsia without any other symptom, on the other hand, yielded a positive endoscopic finding with O.R of 0.67 (95% C.I: 0.57-0.80). Alarm symptoms (UGI bleeding, recurrent vomiting, dysphagia or weight loss associated with dyspepsia) yielded a positive endoscopic finding with an O.R of 2.34 (95% C.I: 1.74-3.13). Conclusion: Most patients in Kumasi underwent UGIE because of dyspepsia in the absence of any other symptom. These patients were more likely to have normal endoscopic findings. The opposite was true for those presenting with alarm symptoms. Our results suggest that initial UGIE may be preferentially offered to patients presenting with alarm symptoms especially in resource-poor settings such as ours.

Pan African Medical Journal. 2014; 18:327 doi:10.11604/pamj.2014.18.327.4806

This article is available online at: http://www.panafrican-med-journal.com/content/article/18/327/full/

© Adam Gyedu et al. The Pan African Medical Journal - ISSN 1937-8688. This is an Open Access article distributed under the terms of the Creative Commons Attribution License (http://creativecommons.org/licenses/by/2.0), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.
Introduction

Upper Gastrointestinal (UGI) symptoms are among the commonest complaints for which patients seek medical attention, with the annual prevalence of dyspepsia approximating 25% [1]. Diseases associated with these symptoms are leading causes of morbidity and mortality globally. Peptic ulcer disease (PUD), gastroesophageal reflux disease (GERD) and cancers affect millions of people worldwide [2]. Endoscopy holds an important place in the diagnosis of UGI conditions by enabling visualization, photography, ultrasonography, and biopsying of suspicious lesions [3]. It gives a better diagnostic yield over radiology particularly in the investigation of upper gastrointestinal bleeding, inflammatory conditions of the upper gastro-intestinal track like esophagitis, gastritis and duodenitis as well as the diagnosis of Mallory Weiss tears and vascular malformations [4].

In many cases, accurate diagnosis of pathology can lead to timely, focused treatment. In Ghana, upper gastrointestinal endoscopy (UGE) service is offered in the three teaching hospitals and a few other public or private centers. Previously published work involving UGE among the Ghanaian population have only included patients from Accra [4-6]. Characteristics of patients undergoing UGE in Kumasi are largely unknown. The aim of this study was to document the common UGE findings among the patient population of Kumasi.

Methods

This is a retrospective review of the records of all patients who underwent diagnostic UGE in three endoscopic centers in Kumasi from October 2006 to December 2011. This is a period when there was a break in service of the diagnostic center at Komfo Anokye Teaching Hospital (KATH), the main referral hospital for most of the northern half of Ghana, due to malfunctioning equipment. The centers are Soyuz, Bestcare and Histolab. All three centers operated on an open access policy. As such primary care providers could directly refer patients without consultation with a gastroenterologist. They served patients referred from various hospitals in Kumasi and its environs.

All patients underwent standard pre-procedure preparation that included an overnight fast while nasogastric drainage of the stomach was preferred for those with suspected gastric outlet obstruction. The main form of analgesia and sedation used were throat spray with 2% lignocaine (Xylocaine®, Astra-Zeneca, UK) and intravenous sedation with midazolam (Dormicum®, Roche, Switzerland) respectively. All reports were included except those that were grossly incomplete or inconsistent. Data extracted from the records included the age and gender of the patients, principal indication for the procedure and primary UGE findings. Although biopsies were routinely taken from lesions in the stomach and esophagus for histology, information on histological diagnosis was not available.

Data entry and analysis was done with Stata version 11 (StataCorp, College Station, TX). Descriptive statistics were expressed as frequencies and percentages. Alarm symptom was defined as UGI bleeding, recurrent vomiting, weight loss associated with dyspepsia or dysphagia. The likelihood of yielding a positive finding on UGE for various indications was expressed as odds ratios (O.R) with 95% confidence intervals (C.I). The association between alarm symptoms and various UGE findings was also expressed as O.R with 95% C.I.

Results

Table 1 summarizes the characteristics of the study population. Three thousand one hundred and ten patients underwent complete UGE over the period. 57.3% of the patients were female. Most patients (36.2%) were in the 20-39 age group. 2.1% were over 79 years old. By far the most common primary indication for UGE was dyspepsia occurring without any other symptom, accounting for almost 80% of the cases. For 3.5% of the patients the primary indication was GERD symptoms (retrosternal pain, regurgitation, heartburn or chest pain). Other notable primary indications were recurrent vomiting, dyspepsia associated with weight loss and UGI bleeding. In 11.1% of patients no indication was stated.

Endoscopic findings are presented in Table 2. Half of the patients had normal UGE findings and this was the most common finding. Peptic ulcer disease (PUD) defined as gastritis, duodenitis or both, was the most common positive finding. This was seen in 27.4% of all cases. Gastric ulcer (4.7%) was seen more frequently than duodenal ulcer (3.0%). Gastric cancer was found in 2.1% of cases and non-candidial esophagitis was found in 5.6%. Less commonly reported findings were esophageal varices, gastric polyp and distal esophageal cancer. Recurrent vomiting, dyspepsia associated with
weight loss and UGI bleeding all had significantly increased odds of yielding a positive endoscopic finding. Dyspepsia without any other symptom, on the other hand, had significantly decreased odds of yielding a positive endoscopic finding (Table 3).

The O.R's of diagnosing various conditions endoscopically in patients presenting with alarm symptoms compared to those presenting without alarm symptoms are shown in Table 4. While for PUD the O.R was 1.02 (95% CI: 0.75, 1.38), it was 8.17 (95% CI: 4.81, 13.85) for gastric cancer. Compared to those presenting with non-alarm symptoms the O.R of encountering normal findings on endoscopy in patients presenting with alarm symptoms was 0.43 (95% CI: 0.32-0.57). Gastric cancer was reported as the primary endoscopic finding in 66 patients. Patient age at diagnosis rose steadily to a peak at 40-59 years and then fell gradually (Table 5). Upper GI bleeding was the indication for endoscopy in 53 patients. PUD was the primary finding in 16 of them while in 19 patients the findings were normal. Esophageal varices, gastric ulcer and duodenal ulcer were found in five, five and two patients respectively.

Discussion

This study represents the first ever report on UGIE findings from Kumasi, Ghana. Previously published work involving UGIE among Ghanaian patients have all come from Accra [4-6]. Dyspepsia in the absence of any other symptom was the indication for UGIE in the vast majority of our patients. Such a high proportion has also been reported by the studies from Accra [5, 6] and a similar trend can be observed from other West African and East African studies [7-10]. Other common reasons for UGIE among our patients were GERD symptoms, recurrent vomiting and dyspepsia associated with weight loss. Only 1% of our patients underwent UGIE for dysphagia. Although dysphagia is less encountered in studies from West Africa, it accounts for 25-47% of indications for UGIE among East African studies [9, 11, 12].

Similar to previous Ghanaian studies [4, 6] PUD was the commonest endoscopic finding among our patients. Gastric ulcer was diagnosed more frequently than duodenal ulcers among our patient population in the ratio of 1.6:1. This is in contrast to the findings of one study from Accra that reported more duodenal ulcers than gastric ulcers in the ratio of 6.1:1 [4]. Ohene-Yeboah et al. have previously reported that gastric perforations are more common than duodenal perforations among the Kumasi population. They also noted that patients presenting with gastric perforations were more frequent users and abusers of non-steroidal anti inflammatory drugs and herbal medicines or concoctions [13]. Half of our patients had a normal endoscopic finding. A similar trend can be found in most studies published across Africa [4, 5, 6, 9, 12, 14, 15].

The primary aim of endoscopy in the management of patients with UGI symptoms is to detect organic disease. UGIE services, however, is not widely available in Ghana, and waiting times for the procedure are long [5]. Close to 80% of our patients presented with dyspepsia not associated with any other symptom and in 50% of the patients the endoscopic findings were normal. There is the need to be able to decide which patient should preferentially undergo the procedure, especially in our resource-poor setting.

From our data, patients presenting with dyspepsia in the absence of any other symptom were significantly less likely to get a positive endoscopic diagnosis. Those presenting with recurrent vomiting, dyspepsia together with weight loss or UGI bleeding were significantly more likely to get a positive diagnosis. Also, a patient presenting with an alarm symptom was 2.3 times more likely to yield a positive endoscopic finding compared to one without an alarm symptom. The odds ratio of the same patient having a normal endoscopic finding was actually less than one-half.

Gastric cancer was diagnosed, by endoscopy, about eight times more frequently in patients presenting with an alarm symptom. Patients older than 40 years made up about 75% of this group. From our data it seems prudent to initiate empirical treatment for patients presenting with dyspepsia in the absence of any other symptom and reserving UGIE for those presenting with any of the alarm symptoms, especially if they are older. This approach is supported by the recommendations of the American Gastroenterological Association [16]. H. pylori testing plays an important role in the current recommendations of the American Gastroenterological Association but was not routinely available at our study centers. As testing becomes increasingly available in Kumasi, it remains to be seen how emerging data will shape the management of dyspepsia in our setting.

A limitation of our study is the lack of confirmed pathology for patients with endoscopic diagnosis of cancer. This was because patients reported back to their referring doctors and not to the
endoscopist. This could affect the number of cases categorized as either ulcers or malignancies. Also, because the study used data from private endoscopic centers a selection bias could be contemplated. Although these limitations exist, the paucity of data from Kumasi in the literature makes this report a useful contribution. Further work on UGIE findings among the Kumasi population must incorporate H. pylori testing and histologic diagnoses of biopsies.

Conclusion

The most common indication for undergoing UGIE in Kumasi was dyspepsia in the absence of any other symptom. These patients were more likely to have normal endoscopic findings. Those presenting with alarm symptoms were more likely to have a positive endoscopic finding. Our results suggest that initial UGIE may be preferentially offered to patients presenting with alarm symptoms especially in resource-poor setting such as ours.

Competing interests

The authors declare no competing interests.

Authors’ contributions

Joseph Yorke collected the data. Adam Gyedu analyzed the data and wrote the first draft of the manuscript. Adam Gyedu and Joseph Yorke wrote the final draft of the manuscript.

Acknowledgments

The authors wish to express their thanks to Mr. Dennis Afful Yorke for helping with data collection.

Tables

| Table 1: Characteristics of study population (N=3110) |
| Table 2: Primary upper GI endoscopic findings (N=3110) |
| Table 3: Association between Indication for upper GI endoscopy and a positive endoscopic finding |
| Table 4: Upper GI endoscopic findings in patients with and without alarm symptoms |
| Table 5: Characteristics of patients with a primary endoscopic finding of gastric cancer |

References

1. Talley NJ, Vakil NB, Moayyedi P. American gastroenterological association technical review on the evaluation of dyspepsia. Gastroenterology. 2005 Nov; 129(5): 1756-80. PubMed | Google Scholar

2. Agbakwuru EA, Fatusi AO, Ndububa DA, Alatise OI, Arigbabu OA, Akinola DO. Pattern and validity of clinical diagnosis of upper gastrointestinal diseases in south-west Nigeria. Afr Health Sci. 2006 Jun; 6(2): 98-103. PubMed | Google Scholar

3. Tytgat GN. Role of endoscopy and biopsy in the work up of dyspepsia. Gut. 2002 May; 50 (Suppl 4): 13-6. PubMed | Google Scholar

4. Adufil H, Naader S, Darko R, Baako B, Clegg-Lamptey J, Nkrumah K, et al. Upper gastrointestinal endoscopy at the Korle Bu Teaching Hospital, Accra, Ghana. Ghana Med J. 2007 Mar; 41(1):12-6. PubMed | Google Scholar

5. Dakubo JC, Clegg-Lamptey JN, Sowah P. Appropriateness of referrals for upper gastrointestinal endoscopy. West Afr J Med. 2011 Sep-Oct; 30(5):342-7. PubMed | Google Scholar

6. Tachi K, Nkrumah KN. Appropriateness and diagnostic yield of referrals for oesophagastroduodenoscopy at the Korle Bu Teaching Hospital. West Afr J Med. 2011 May-Jun;30(3): 158-63. PubMed | Google Scholar
7. Danbauchi SS, Keshinro IB, Abdu-Gusau K. Fifteen years of upper gastrointestinal endoscopy in Zaria (1978 - 1993). Afr J Med Med Sci. 1999 Mar-Jun; 28(1-2): 87-90. PubMed | Google Scholar

8. Kefenie H. Oesophagogastroduodenoscopies: a review of 720 cases. Ethiop Med J. 1983 Apr; 21(2): 95-9. PubMed | Google Scholar

9. Ocama P, Kagimu MM, Odida M, Wablinga H, Opio CK, Colebunders B, et al. Factors associated with carcinoma of the oesophagus at Mulago Hospital, Uganda. Afr Health Sci. 2008 Jun; 8(2): 80-4. PubMed | Google Scholar

10. Olokoba AB, Olokoba LB, Jimoh AA, Salawu FK, Danburam A, Ehalaie B. Upper gastrointestinal tract endoscopy indications in northern Nigeria. J Coll Physicians Surg Pak. 2009 May; 19(5): 327-8. PubMed | Google Scholar

11. Mothes H, Chagaluka G, Chiwewe D, Malunga M, Mwatibu B, Wilhelm T, et al. Do patients in rural Malawi benefit from upper gastrointestinal endoscopy?. Trop Doct. 2009 Apr; 39(2): 73-6. PubMed | Google Scholar

12. Wolf LL, Ibrahim R, Miao C, Muyco A, Hosseinpour MC, Shores C. Esophagogastroduodenoscopy in a public referral hospital in Lilongwe, Malawi: spectrum of disease and associated risk factors. World J Surg. 2012 May; 36(5): 1074-82. PubMed | Google Scholar

13. Ohene-Yeboah M, Togbe B. Perforated gastric and duodenal ulcers in an urban African population. West Afr J Med. 2006 Jul-Sep; 25(3): 205-11. PubMed | Google Scholar

14. Andrew PJ, Dixon RA, Iya D, Park GT. Upper gastrointestinal endoscopy in an urban hospital in northern Nigeria: association of presenting features with endoscopic findings. Trop Doct. 1995 Jan; 25(1): 9-11. PubMed | Google Scholar

15. Kelly P, Katema M, Amadi B, Zimba L, Aparicio S, Mudenda V, et al. Gastrointestinal pathology in the University Teaching Hospital, Lusaka, Zambia: review of endoscopic and pathology records. Trans R Soc Trop Med Hyg. 2008 Feb; 102(2): 194-9. PubMed | Google Scholar

16. Talley NJ. American Gastroenterological Association medical position statement: evaluation of dyspepsia. Gastroenterology. 2005 Nov; 129(5): 1753-5. PubMed | Google Scholar

| Table 1: Characteristics of study population (N=3110) |
|-----------------------------|-----------------------------|
| **Variable**                | **Number of patients (%)**  |
| Age (year)                  |                             |
| <20                         | 104 (3.3)                   |
| 20-39                       | 1127 (36.2)                 |
| 40-59                       | 959 (30.9)                  |
| 60-79                       | 394 (12.7)                  |
| >79                         | 66 (2.1)                    |
| Unknown                     | 460 (14.8)                  |
| **Sex**                     |                             |
| Female                      | 1783 (57.3)                 |
| **Primary indication for UGIE** |                         |
| Dyspeptic symptoms alone    | 2435 (78.3)                 |
| GERD symptoms               | 107 (3.5)                   |
| Recurrent vomiting          | 76 (2.4)                    |
| Dyspepsia & weight loss     | 62 (2.0)                    |
| Upper GI bleeding           | 53 (1.7)                    |
| Dysphagia                   | 32 (1.0)                    |
| Not stated                  | 345 (11.1)                  |
### Table 2: Primary upper GI endoscopic findings (N=3110)

| Endoscopic findings      | Number of patients (%) |
|--------------------------|------------------------|
| Normal findings          | 1556 (50.0)            |
| PUD                      | 850 (27.4)             |
| Gastric ulcer            | 147 (4.7)              |
| Duodenal ulcer           | 94 (3.0)               |
| Gastric cancer           | 66 (2.1)               |
| Gastric polyp            | 23 (0.7)               |
| Duodenal cancer          | 4 (0.2)                |
| Duodenal diverticulum    | 2 (0.1)                |
| Distal esophageal cancer | 3 (0.1)                |
| Esophageal candidiasis   | 50 (1.6)               |
| Noncandidial esophagitis | 174 (5.6)              |
| Hiatus hernia only       | 91 (2.9)               |
| Esophageal varices       | 37 (1.2)               |
| Esophageal stricture     | 13 (0.4)               |

*PUD: gastritis, duodenitis or both

### Table 3: Association between Indication for upper GI endoscopy and a positive endoscopic finding

| Indication for endoscopy | Positive finding N=1554* | Normal finding N=1556* | O.R (95% CI) |
|--------------------------|--------------------------|------------------------|--------------|
| Dyspeptic symptoms alone | 1165 (75.0)              | 1270 (81.6)            | 0.67 (0.57-0.80) |
| GERD symptoms            | 50 (3.2)                 | 57 (3.7)               | NS           |
| Sustained vomiting       | 60 (3.9)                 | 16 (1.0)               | 3.87 (2.23-6.69) |
| Dyspepsi & weight loss   | 39 (2.5)                 | 23 (1.5)               | 1.72 (1.03-2.87) |
| Upper GI bleeding        | 34 (2.2)                 | 19 (1.2)               | 1.81 (1.03-3.16) |
| Dysphagia                | 19 (1.2)                 | 13 (0.8)               | NS           |

*Values are N (column %); NS: non-significant
### Table 4: Upper GI endoscopic findings in patients with and without alarm symptoms

| Endoscopic finding     | Alarm symptom N (223)* | Non-alarm symptom N (2542)* | O.R (95% CI)    |
|------------------------|------------------------|-----------------------------|-----------------|
| Normal findings        | 71 (31.8)              | 1327 (52.2)                 | 0.43 (0.32-0.57) |
| PUD                    | 61 (27.4)              | 686 (27.0)                  | NS              |
| Gastric ulcer          | 16 (5.1)               | 116 (4.6)                   | NS              |
| Duodenal ulcer         | 11 (4.9)               | 75 (3.0)                    | NS              |
| Gastric cancer         | 24 (10.8)              | 37 (1.5)                    | 8.17 (4.81-13.85) |
| Gastric polyp          | 4 (1.8)                | 16 (0.6)                    | 2.89 (1.00-8.29) |
| Duodenal cancer        | 2 (0.9)                | 2 (0.1)                     | 11.50 (2.02-65.38) |
| Duodenal diverticulum  | 1 (0.5)                | 1 (0.0)                     | -               |
| Distal esophageal cancer| 1 (0.5)               | 1 (0.0)                     | -               |
| Esophageal candidiasis | 4 (1.8)                | 42 (1.7)                    | NS              |
| Noncandidial esophagitis| 11 (4.9)              | 139 (5.4)                   | NS              |
| Hiatus hernia only     | 1 (0.5)                | 71 (2.8)                    | 0.16 (0-0.90)   |
| Esophageal varices     | 9 (4.0)                | 23 (0.9)                    | 4.61 (2.14-9.9) |
| Esophageal stricture   | 7 (3.1)                | 6 (0.2)                     | 13.70 (4.78-39.22) |
| Any organic disease    | 152 (68.2)             | 1215 (47.8)                 | 2.34 (1.74-3.13) |

*Values are N (column %); NS: non-significant; Alarm symptom: upper GI bleeding, recurrent vomiting, weight loss associated with dyspepsia or dysphagia

### Table 5: Characteristics of patients with a primary endoscopic finding of gastric cancer

| Age     | Number of patients | Number of patients with gastric cancer (%) |
|---------|--------------------|------------------------------------------|
| <20     | 104                | 0 (0.0)                                  |
| 20-39   | 1127               | 12 (18.2)                                |
| 40-59   | 959                | 23 (34.9)                                |
| 60-79   | 394                | 19 (28.8)                                |
| >79     | 66                 | 8 (12.1)                                 |
| Unknown age | 460                | 4 (6.0)                                  |
| Total   | 3110               | 66 (100.0)                               |