SCIENTIFIC ARTICLE

Value of upper gastrointestinal endoscopy in evaluating patients presenting with dyspepsia

Isuru S Almeida, Umesh Jayarajah, MVC de Silva, Dharmabandhu N Samarasekera
Department of Surgery, Faculty of Medicine, University of Colombo, Sri Lanka

Key words: Upper gastrointestinal endoscopy; upper abdominal pain; dyspepsia

Abstract

Introduction

Dyspepsia is a common symptom that is encountered in clinical practice and upper gastrointestinal endoscopy (UGIE) has gained wide acceptance in the evaluation of dyspepsia. This study was aimed to determine the yield of UGIE in patients presenting with dyspepsia to a tertiary care centre.

Methods

A retrospective analysis of patients followed up at a single unit in a tertiary care hospital from 2007 to 2016 was carried out. Patients who underwent UGIE for evaluation of dyspepsia were included in the study. Those with additional symptoms like dysphagia, loss of weight, loss of appetite and pancreato-biliary pathology were not included. The yield of UGIE in patients with dyspepsia (i.e.peptic ulcer, gastritis, polyp, cancer) in relation to two age groups (≤40years and >40 years) was determined and compared.

Results

A total of 491 patients were analysed (males=259, 52.7% ; mean age=46.65±SD21.93 years). Among them, 31.97 %(n=157) were aged 40 years or less. Abnormalities were detected in 301(61.3%) patients (peptic ulcer-2.44%, gastritis-20.4%, polyp-3.9%, endoscopically malignant lesions-3.2%). In the ≤40 age group, 58.6%(n=93) had positive endoscopic findings (i.e.peptic ulcer-1.2%, gastritis-25.5%, polyp-1.2%, endoscopically malignant lesions-1.9%) while in the >40 year group, 62.6% had positive endoscopic findings (i.e.peptic ulcer-3.0%, gastritis-18.8%, polyp-5.1%, endoscopically malignant lesions-4.0%). Only two endoscopically malignant lesions were histologically malignant and both were detected in those who were aged more than 40 years.

Conclusions

In this study, the diagnostic yield of UGIE in detecting peptic ulcers, inflammatory and neoplastic lesions were considerably high in both age groups. Therefore, the age threshold for endoscopy may be lowered to avoid missing a significant lesion.

Background

One-third of adults experience pain or discomfort in the upper abdomen during a given year, of which, one-quarter of them seek medical treatment (1, 2). Nearly 4% of them visit primary care centers with a presenting complaint of dyspepsia, while another 20% visit outpatient gastroenterology consultations (1, 2). However, organic causes are found only in a minority of such patients (3). Research done at the Royal Victoria Hospital, Belfast has shown that 97% of patients over 65 years of age who complained of epigastric pain had abnormal UGIE findings (4).

Another study has revealed that offering UGIE to male patients >45years would be more beneficial because more sinister causes like malignancies are common in males of that age group (5). Routine UGIE in all patients with upper abdominal pain or dyspepsia may impose a considerable burden on the cost of health care, especially in a developing country like Sri Lanka. Therefore, offering UGIE in all patient with clinical symptoms may not be cost effective. Furthermore, routine UGIE in all patients with dyspepsia may result in exposing patients to unnecessary discomfort or complications related to the procedure.

We planned out our study considering the fact that only few studies have been done in the South Asian region regarding this context (6). Therefore, this study was aimed to describe the diagnostic yield of upper gastrointestinal endoscopy in patients presenting with dyspepsia. In addition, we compared the findings between young (40 years or less) and older patients (above 40 years).

Correspondence: Dharmabandhu N Samarasekera
E-mail: samarasekera58@yahoo.com
Received: 02-07-2018 Accepted: 28-08-2018
https://orcid.org/0000-0003-2229-7549
DOI: http://doi.org/10.4038/sljs.v36i2.8510

Methods

This was a retrospective analysis of patients who underwent UGIE for evaluation of dyspepsia at the University Surgical Unit of the National Hospital of Sri Lanka (NHSL), which were prospectively recorded from January 2007 to January 2016 using an electronic database which had a standard format.

The study protocol was approved by the Ethics Committee of the National Hospital of Sri Lanka. We defined dyspepsia according to the American Gastroenterological Association technical review definition which states, "chronic or recurrent pain or discomfort centered in the upper abdomen" as dyspepsia (2). The American Gastroenterological Association further states that, patients with predominant frequent heartburn or acid regurgitation are considered to have gastroesophageal reflux disease (GORD) until proven otherwise and are not part of the definition of dyspepsia.

In our unit, patients aged over 40 years presenting with dyspepsia irrespective of the presence of alarming symptoms received UGIE for assessment and patients below 40 years without alarming symptoms were given a trial of proton pump inhibitors before offering UGIE. Details related to the procedure such as, the extent of the anatomy of gastrointestinal tract visualised, abnormalities noted and general patient details such as patient symptoms and duration of symptoms were retrieved from the customized computer based database. Relevant histology reports were also analysed. All adult patients presenting with dyspepsia who underwent UGIE were considered for analysis. Those who had other additional symptoms like dysphagia, loss of weight, loss of appetite and known pancreaticobiliary pathologies were not included. Those who had a previous diagnosis of malignant lesions, polyps, peptic ulcer disease and family history of gastrointestinal malignancies were excluded. Finally a total of 491 patients were included in this study.

All patients underwent UGIE which were performed by general surgeons or by surgical trainees under supervision. All patients were kept fasting 6 hours for solids and 2 hours for liquids before the procedure. A standard 100 cm fibre optic flexible upper gastrointestinal endoscope (Olympus GIF-100; Olympus Optical Co., Ltd., Tokyo, Japan) was used in all cases. Following each procedure, findings were prospectively recorded in an electronic database.

The results of categorical variables were expressed as frequencies and proportions while continuous variables were expressed using means ± standard deviations. The patients were grouped into two categories, i.e. age 40 years or less and age more than 40 years and the yield of UGIE was compared between the two groups.

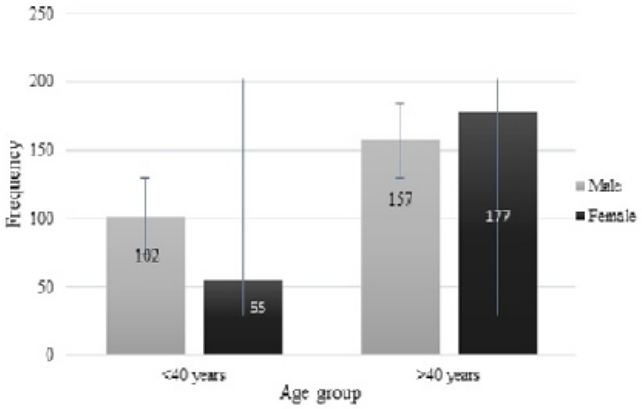

Figure 1. Gender distribution according to the age groups

Results

Demographics

A total of 491 patients were assessed from January 2007 to January 2016. There were 259(52.7%) males and 232(47.3%) females in the study sample. Mean age was 46.65 years (SD±21.93, range 19 -90) years. Of those, 157 (32%) patients were aged 40 years or less and 334 (68%) were aged more than 40 years (Figure 1).

Endoscopic findings

UGIE was unremarkable in 190 (38.7%) patients. Among those with positive findings (n=301), 209 (69.4%) were in the category of age more than 40 years. Gastritis was the commonest endoscopic finding encountered (20.4%, n=101). In addition, there were 19 (3.9%) patients with upper GI polyps, 16 (3.2%) patients with endoscopically malignant lesions, 58 (11.8%) hiatus hernias, 37 (7.5%) erosions and 12(2.44%) peptic ulcer disease. Fungating and/or irregular mass, ulcerated mass or infiltrative and/or irregular ulceration were defined as endoscopically malignant (7).

Among those aged less than 40 years, 58.6%(n=92) had positive findings (i.e.peptic ulcer-1.2%, gastritis-25.5%, polyp-1.2%, endoscopically malignant lesions-1.9%) while in the >40 year group, 62.6% had positive findings (i.e.peptic ulcer-3.0%, gastritis-18.8%, polyp-5.1%, endoscopically malignant lesions-4.0%). Other benign conditions such as oesophagitis and hiatus hernia were comparable in both age groups (Table 1).

A total of 16 (3.2%) patients had endoscopically malignant looking lesions. Of those who were aged 40 years or less, in 3(1.9%) patients, endoscopically malignant lesions were detected. Of those who were aged more than 40 years, 13(3.6 %) endoscopically malignant lesions were identified (Table 1).

Histology findings

Biopsies were taken from 68 patients for histological evaluation. Histology findings were unremarkable in 13 (19.12 %) patients. While 55 (80.88 %) patients had a significant finding. Among them, 9 (16.36%) were aged 40

Table 1. Yield of UGIE in relation to age and sex

UGIE findings	40 years or less (n=157)			More than 40 years(n=334)		
	Males	Female	Total N (%)	Male	Female	Total N (%)
Normal	43	21	65 (41.4%)	56	69	125 (37.4%)
Oesophagitis	3	3	6 (3.8%)	11	7	18 (5.4%)
Hiatus hernia	13	8	21 (13.3%)	14	23	37(11.1%)
Gastritis	24	16	40(25.5 %)	24	39	61 (18.8 %)
Peptic Ulcer	1	1	2 (1.2%)	5	5	10 (3.0%)
Polyp	1	1	2 (1.2%)	12	5	17 (5.1%)
Endoscopically malignant lesions	3	0	3 (1.9%)	6	7	13 (4.0%)
Erosions	7	2	9 (5.7%)	14	14	28 (8.4%)
Bile reflux	1	1	2 (1.2%)	1	0	1 (0.3%)
Gastro-oesophageal candidiasis	0	0	0 (0%)	4	1	5 (1.5%)

Table 2. Histology findings in relation to age and sex

Histology finding	40 years or less			More than 40 years		
	Male	Female	Total	Male	Female	Total
Unremarkable	5	1	6 (40%)	5	2	7 (13.47%)
Chronic gastritis	6	2	8 (53.3%)	14	16	30 (57.69%)
Inflammatory Ulcer	-	-	-	1	2	3 (5.77%)
Reflux oesophagitis	-	-	-	-	3	3 (5.77%)
Reactive gastropathy	-	-	-	3	1	4 (7.69 %)
Hyperplastic polyp	1	-	1 (6.7%)	-	-	-
Duodenitis with reactive atypia of glandular epithilium	-	-	-	1	-	1 (1.92%)
Chronic gastritis with intestinal metaplasia	-	-	-	-	1	1 (1.92%)
Diffuse type adenocarcinoma of stomach (poorly differentiated)	-	-	-	1	-	1 (1.92%)
Squamous cell carcinoma of oesophagus and proximal stomach (moderately differentiated)	-	-	-	-	1	1 (1.92%)
Focal partial villous atrophy	-	-	-	1	-	1(1.92%)
Prominent sub-mucosal Brunner's gland	-	-	-	1	-	1(1.92%)

years or less while 46(83.64%) were more than 40 years. Of those with endoscopic evidence of gastritis, the majority had mild gastritis and therefore, were not subjected to histological evaluation. Chronic gastritis was the commonest histology finding encountered (n=38, 55.9%) in both age groups (Sydney criteria were used to assess gastritis). Further-more, since the gastric polyps detected were small and endoscopically benign, the majority were not routinely sent for histological analysis. Of the four gastric polyps sent for histology, two showed normal mucosa, one showed evidence of chronic gastritis and one was a hyperplastic polyp. (Table 2).

Only two endoscopically malignant lesions were histologically malignant and both were detected in those who were aged more than 40 years (table 2). One was a poorly differentiated adenocarcinoma of the stomach and the other was a moderately differentiated squamous cell carcinoma of the oesophagus and the proximal stomach.

Discussion

Dyspepsia is a common condition which is reported to occur approximately in 25% of the population each year and the American Gastroenterological Association technical review defines dyspepsia as, "chronic or recurrent pain or discomfort centered in the upper abdomen" as dyspepsia (2). Pain in the upper abdomen has been reported to be a predominant symptom, followed by other upper gastrointestinal symptoms.

The initial assessment of patients with dyspepsia include a thorough history and physical examination with prompt attention given to the findings suggestive of sinister causes. However, symptoms can be vague and patients have varying threshold for pain. Furthermore, possible causes may often overlap, resulting in a difficult clinical diagnosis and in most of the patients a definite cause is difficult to establish (6). However, UGIE is helpful in excluding sinister causes such as malignancies and significant causes such as peptic ulcer disease, but the cost effectiveness of routine use of UGIE in a low resource setting like in Sri Lanka is questionable.

Previous studies have shown that in general, a specific aetiology is not identified in about 50 – 60% of patients, and was called functional dyspepsia (). However, variable yield has also been reported (11). In our study, UGIE was normal in 38.7% of patients. The commonest UGIE finding was inflammatory lesions (i.e.gastritis) (19.6%) followed by hiatus hernia (11.8%) and erosions (7.5%). The reason for the difference in the yield may be due to the differences in selection of patients in various studies. In the present study, those patients who had a definite past history suggestive of upper gastrointestinal disease such as diagnosed peptic ulcer disease, history of upper gastrointestinal bleed or melaena, intake of non-steroidal anti-inflammatory drugs (NSAIDS), gall bladder disease and family history of malignancies were not included.

A similar study from South Asia was carried out by MohdMubarik et al (11) to establish the yield of UGIE in 200 patients with dyspepsia. In that study, no abnormality was found in 108 (54%) patients and organic dyspepsia was seen in 92 (46%) patients. In the organic dyspepsia group, the majority (43.47%) had peptic ulcer disease (combined duodenal and gastric), followed by inflammatory lesions (39.13%) which was considerably a higher proportion compared to our study. In a similar study by Mansi et al (12), erosive pre-pyloric changes 16.9% and duodenitis 20.1% were the commonest findings in those who were aged less than 40 years. Furthermore, no malignant lesions were detected in patients aged less than 40 years, while only about 1 % of those aged less than 60 years had neoplasms (12). In a study conducted by Samaila et al (13) in 144 patients, erosive pre-pyloric changes (16.9%) and duodenitis (20.1%) were the commonest findings in those who were aged less than 40 years. Furthermore, no malignant lesions were detected in patients aged less than 40 years, while only about 1% of those aged less than 60 years had neoplasms (13). In a study conducted by Samaila et al on 144 patients, significant findings were detected in about 30.6% of participants which included gastritis and peptic ulcer disease. There was no significant difference in age and gender in relation to the organic pathologies detected (13). The findings in the above mentioned studies varied considerably. Therefore, we suggest that the criteria for endoscopy to be decided based on the disease pattern in the community.

Another recent systematic review with meta-analysis conducted by Chen et al (14) found that, the detection rates of malignancies are high in Asian young population with dyspepsia. Therefore, they suggested age threshold for endoscopy screening in Asian populations to be 35 years. A randomized clinical trial conducted by Tan et al (15) concluded that, treatment with 2 weeks of rifaximin led to adequate relief of global dyspeptic symptoms, belching and post-prandial fullness/bloating in subjects with functional dyspepsia and this difference was more marked in females (15).

It is important to note that in our study, gastritis and hiatus hernia were detected at a higher rate among those aged less than 40 years which can account for their dyspeptic symptoms. However, malignant lesions were detected only in those who were aged more than 40. One limitation of our study is, being retrospective, it may be subjected to observation bias. Furthermore, the clinical significance of certain lesions such as gastric polyps, mild gastritis and hiatus hernia could not be determined due to its retrospective nature. Gastritis was diagnosed endoscopically using white light

endoscopy which is not reliable and therefore may affect the statistical evaluations in this study. Of the suspected endoscopically malignant lesions only 2 were histologically proven. We did not analyse the false negative rates of the histological findings in terms of detecting malignant lesions and therefore, the accuracy of endoscopic diagnosis could not be described. Furthermore, H. pylori which is an important cause of dyspepsia was not analysed in this study. Large scale prospective studies are needed to obtain more accurate findings while overcoming the above limitations.

Conclusion

In our study, the prevalence of peptic ulcer, inflammatory and neoplastic lesions were considerable high in both age groups. Therefore, we suggest a lower threshold for doing UGIE in patients with dyspepsia to rule out any underlying organic cause so that appropriate treatment can be initiated without delay.

All authors disclose no conflict of interest. The study was conducted in accordance with the ethical standards of the relevant institutional or national ethics committee and the Helsinki Declaration of 1975, as revised in 2000.

References

1. Majumdar SR, Soumerai SB, Farraye FA, Lee M, Kemp JA, Henning JM, et al. Chronic acid-related disorders are common and underinvestigated. The American journal of gastroenterology. 2003;98(11):2409-14.
   https://doi.org/10.1111/j.1572-0241.2003.07706.x
2. Talley NJ, Vakil NB, Moayyedi P. American gastroenterological association tech-nical review on the evaluation of dyspepsia. Gastroenterology. 2005;129(5):1756-80.
   https://doi.org/10.1053/j.gastro.2005.09.020
3. Miwa H, Ghoshal UC, Fock KM, Gonlachanvit S, Gwee KA, Ang TL, et al. Asian consensus report on functional dyspepsia. Journal of gastroenterology and hepatology. 2012;27(4):626-41.
   https://doi.org/10.1111/j.1440-1746.2011.07037.x
4. Brown D, Collins J, Love A. Outcome and benefits of upper gastrointestinal endos-copy in the elderly. The Ulster medical journal. 1989;58(2):177.
5. Marmo R, Rotondano G, Piscopo R, Bianco MA, Russo P, Capobianco P, et al. Combination of age and sex improves the ability to predict upper gastrointestinal malig-nancy in patients with uncomplicated dyspepsia: a prospective multicentre database study. The American journal of gastroenterology. 2005;100(4):784-91.
   https://doi.org/10.1111/j.1572-0241.2005.40085.x
6. Bazaldua O, Schneider F. Evaluation and management of dyspepsia. American family physician. 1999;60(6):1773-84, 87-8.
7. Wu W, Wu Y-L, Zhu Y-B, Wei Q, Guo Y, Zhu Z-G, et al. Endoscopic features predictive of gastric cancer in superficial lesions with biopsy-proven high grade intraepi-thelial neoplasia. World Journal of Gastroenterology : WJG. 2009;15(4):489-95.
   https://doi.org/10.3748/wjg.15.489
8. Brun R, Kuo B. Functional dyspepsia. Therapeutic advances in gastroenterology. 2010;3(3):145-64.
   https://doi.org/10.1177/1756283X10362639
9. Talley NJ, Silverstein MD, Agreus L, Nyren O, Sonnenberg A, Holtmann G. AGA technical review: evaluation of dyspepsia. Gastroenterology. 1998;114(3):582-95.
   https://doi.org/10.1016/S0016-5085(98)70542-6
10. Richter J. Dyspepsia: organic causes and differential characteristics from func-tional dyspepsia. Scand J Gastroenterol. 1991;26(sup182):11-6.
11. MohdMubarik M, Malik G. diagnostic yield of upper GI endoscopy and ultraso-nography in patients of dyspepsia. JK-Practitioner. 2012;17(4):15-9.
12. Mansi C, Mela GS, Savarino V, Mele MR, Valle F, Celle G. Open access endosco-py: a large-scale analysis of its use in dyspeptic patients. J Clin Gastroenterol. 1993;16(2):149-54.
   https://doi.org/10.1097/00004836-199303000-00015
13. Samaila A, Okeke E, Malu A. Endoscopic findings and clinical predictors of organ-ic disease among patients with dyspepsia in Jos, Nigeria. Nigerian Journal of Gastroenter-ology and Hepatology. 2011;3(1-2):39-46.
14. Chen S, Gwee K, Lee J, Miwa H, Suzuki H, Guo P, et al. Systematic review with meta‐analysis: prompt endoscopy as the initial management strategy for uninvestigated dyspepsia in Asia. Alimentary pharmacology & therapeutics. 2015;41(3):239-52.
   https://doi.org/10.1111/apt.13028
15. Tan V, Liu K, Lam F, Hung I, Yuen M, Leung W. Randomised clinical trial: rifax-imin versus placebo for the treatment of functional dyspepsia. Alimentary pharmacology & therapeutics. 2017;45(6):767-76.
   https://doi.org/10.1111/apt.13945