Upper Gastrointestinal Endoscopy in Patients Aged 65 Years or Older: Indications and Main Findings From a Referral Hospital, Jazan, Saudi Arabia

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ABSTRACT

BACKGROUND: It is well known that incidence of gastrointestinal (GI) disease increases with age. Endoscopy for the evaluation of upper gastrointestinal (UGI) symptoms in elderly patients frequently provides useful diagnostic information.

OBJECTIVES: To ascertain the indications for and describe the outcomes of upper gastrointestinal endoscopy in older patients (65+ years) referred to King Fahd Central Hospital (KFCH), Jazan, South West Saudi Arabia.

METHODS: This is a retrospective, descriptive, cross-sectional hospital-based study conducted at KFCH. Records of 591 elderly patients were reviewed during the period of 11 years from 1994 to 2005. Indications for and diagnoses from upper gastrointestinal endoscopy were statistically analyzed.

RESULTS: The mean age of patients studied was 73.5 years, with men representing 64.8% ($n = 383$). The most common indications for upper gastrointestinal endoscopy were: UGI bleeding, indicated by hematemesis or melena (139, 23.5%); epigastric pain (67, 11.3%); and acid peptic disease (60, 10.2%). Gastritis was the most common finding of the procedure, with no significant differences between males (20.9%) and females (23.6%). Esophageal varices was the second most common upper GI endoscopy finding among the study participants (102, 17.3).

CONCLUSIONS: The most common indications for upper gastrointestinal endoscopy were UGI bleeding, epigastric pain and Acid Peptic Disease, Gastritis and esophageal varices were the most common findings of upper GI endoscopies performed in the studied population.

KEYWORDS: upper gastrointestinal endoscopy, elderly, Jazan, gastritis, esophagitis, upper gastrointestinal bleeding

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Introduction

Average life expectancy around the world increased dramatically during the 20th century.[1] Saudi Arabia's population enjoys an average life expectancy of 75 years (78 for females and 74 for males).[2] This increase in age is part of a major transition in human health, a change spreading around the world at different rates and along many pathways.[3] This transition includes a shift in the leading causes of death and illness from infectious and parasitic diseases to non-communicable diseases and chronic conditions.[4]

It is well known that with increasing age, the incidence of gastrointestinal (GI) disease increases. Many GI diseases are detected and/or treated using GI endoscopy.[5–7] Upper gastrointestinal endoscopy (UGIE) for the evaluation of upper GI symptoms in elderly patients frequently provides useful diagnostic information.[8,9] Endoscopy of the upper gastrointestinal tract is a safe and easily carried out procedure of high diagnostic value and also therapeutic value in some cases.[10]

Increase in human age is associated with decline in physiological functioning of the major organ systems. The incidence of gastrointestinal bleeding rises with age, and major GI bleeding may lead to death.[10–12] Geriatric patients are at increased risk for peptic ulcer and cancers.[13,14] Also, it is well known that the incidence of both esophageal and gastric cancer are distinctly higher in aged patients as compared to young people.[14]

The main objective of this paper is to ascertain the indications for and describe the outcomes of upper gastrointestinal endoscopy in older patients (65+ years) referred to King Fahd Central Hospital (KFCH), Jazan, South West Saudi Arabia.

Patients and Methods

Study design and participants. This is a retrospective, descriptive, cross-sectional, hospital-based study conducted at King Fahd Central Hospital (KFCH), a referral hospital that serves the Jazan region, located in South West Saudi Arabia. The data was collected from 1994 to 2005. During this period, all patients (591) referred for endoscopy were enrolled in this study.

Data collection. After obtaining relevant ethical clearance, the records of patients who presented at the endoscopy units during the study period were reviewed. Data extracted from the medical records includes age, gender, nationality,

smoking habits and khat chewing habits. Clinical data extracted comprises the endoscopy unit's review: pre-endoscopy review of symptoms, co-morbidity, baseline vital signs and the findings of the procedure(s). Indications for upper GI endoscopy were categorized as: upper gastrointestinal bleeding, anemia, reflux symptoms (heartburn and/or regurgitation), dysphagia, weight loss, anorexia or dyspepsia. In cases with multiple indications, we chose the predominant one. Endoscopic diagnosis was classified as: gastric ulcer, esophagitis, ulcer disease, duodenal erosion, erosive gastritis, varices, or other related diagnosis.

Endoscopy procedure. The Endoscopy unit is run by consultants who are trained endoscopists. The unit receives referrals for diagnostic EGD from other general hospitals in the Jazan region and from inpatient and outpatient departments (OPD) of the hospital. Endoscopy was conducted as per international guidelines and KFCH endoscopy guidelines.

Data analysis. Data were analyzed using the Statistical Package for Social Sciences (SPSS) for Windows release 17.0 (SPSS Inc.). Data analysis involved descriptive statistics as well as inferential statistics. Descriptive statistics included simple tabulation, frequencies, and proportion for categorical variables including cross-tabulations. Continuous variables were expressed as mean ± standard deviation (SD). Categorical variables were expressed as percentages and comparisons between groups were made using Fisher's exact test or chi-squared test, as applicable. Univariate analysis of endoscopy outcome was performed using a logistic regression model. Statistical significance was considered $P < 0.05$.

Ethical consideration. Ethical approval was obtained from Research Ethics Committee (REC) in Jazan University. Patients' consents to conduct endoscopy were obtained prior to enrollment. Confidentiality of all data was maintained, as we relied on anonymized secondary data with no risk that participants could become identifiable.

Results

During the study period a total of 591 UGIEs were performed. Table 1 illustrates some background characteristics of the study population. The mean age of the participants was 73.5 years (SD = 7.4). The majority of study participants (59.4%) were in the range 65–74 years old, and 31.8% of participants were aged 75–84. The majority of study participants were Saudi (97.3%), compared to only 2.7% who were non-Saudi. Only 3.9% of study subjects were khat chewers. Male participants constituted 64.8%, of the study participants, while females were 35.2%.

The most common indications for upper gastrointestinal endoscopy were UGI bleeding (hematemesis/melena) (139, 23.5%), epigastric pain (67, 11.3%) and acid peptic disease (60, 10.2%). Others were reflux esophagitis (8.1%), dysphagia (6.6%) and dyspepsia (4.7%). As shown in Table 2, there was a significant difference between incidence of UGI bleeding (hematemesis/melena) and dysphagia between males and females ($P < 0.05$). Also there was a significant difference in incidence of persistent nausea/vomiting and malignancy according to age, as both increased with increase in age ($P < 0.05$).

Table 1. Some background characteristics of study participants.

CHARACTERISTICS	№	%
Age groups		
65–74 years	351	59.4
75–84 years	188	31.8
85 years and above	52	8.8
Gender		
Male	383	64.8
Female	208	35.2
Nationality		
Saudi	575	97.3
Non-Saudi	16	2.7
Tobacco use		
Users	11	1.9
Non-users	177	29.9
Not stated	403	68.2
Khat users		
Users	23	3.9
Non-users	257	43.5
Not stated	311	52.6
Total	591	100

As shown in Table 3, gastritis constituted the main finding for the procedure, with no significant differences between males (20.9%) and females (23.6%) or by age, divided into two groups (65–74 years and 75+ years). Esophageal varices was recorded as the second most common finding among the study population, in 102 (17.3%) of elderly patients. Esophageal varices was found more frequently in males (20.1%) than in females (12.0%, $P < 0.05$). Esophagitis and duodenal ulcer were found in 13% of the study population, while 75 patients (12.7%) showed hiatus hernia findings. Considering variation of findings by age group, findings of esophagitis, esophageal ulcer and esophageal mass increased with increase in age ($P < 0.05$ for all). Normal findings were reported for 96 (16.2%) of the elderly patients, with no significant difference according to gender or age group ($P > 0.05$).

In Table 4 various factors were evaluated for possible association with the main finding of the UGI procedure. Factors that were associated with increased risk of gastritis-included epigastric pain (OR 2.23; 95% CI: 1.29–3.83), abdominal pain (OR 1.51; 95% CI: 0.43–5.25), Non-Steroidal Anti-Inflammatory drugs (NSAIDs) (OR 3.86; 95% CI: 0.48–30.7), and khat chewing only (OR 1.1; 95% CI: 0.41–2.91). Factors associated with an increased risk of esophageal varices disease

Table 2. Causes of referral of the studied patients to the upper endoscopy unit according to gender and age groups.

INDICATIONS	GENDER			AGE GROUPS			TOTAL № %
	MALES № %	FEMALES № %	*P*-VALUE	64–74 № %	75+ № %	*P*-VALUE	
UGI bleeding (hematemesis/melena)	103 (26.9)	36 (17.3)	0.0088	84 (23.9)	55 (22.9)	0.77182	139 (23.5)
Epigastric pain	41 (10.7)	26 (12.5)	0.50926	42 (12.0)	25 (10.4)	0.56192	67 (11.3)
Acid Peptic Disease (APD)	35 (9.1)	25 (12.0)	0.2670	40 (11.4)	20 (8.3)	0.2262	60 (10.2)
Dyspepsia	18 (4.7)	10 (4.8)	0.95216	14 (4.0)	14 (5.8)	0.2983	28 (4.7)
Reflux esophagitis	33 (8.6)	15 (7.2)	0.5485	28 (8.00)	20 (8.3)	0.8728	48 (8.1)
Dysphagia	16 (4.2)	23 (11.1)	0.00128	22 (6.3)	17 (7.1)	0.6965	39 (6.6)
Abdominal pain	12 (3.1)	7 (3.4)	0.88076	8 (2.3)	11 (4.6)	0.1187	19 (3.2)
Persistent nausea/vomiting	16 (4.2)	12 (5.8)	0.3843	11 (3.1)	17 (7.1)	0.02642	28 (4.07)
Anemia	26 (6.8)	9 (4.3)	0.2262	17 (4.8)	18 (7.5)	0.18024	35 (5.9)
Esophageal varices	7 (1.8)	1 (0.5)	0.1770	8 (2.3)	0 (0)	NA	8 (1.4)
Malignancy	14 (5.8)	4 (3.1)	0.242	6 (2.9)	12 (7.6)	0.02202	18 (4.9)
Melena	21 (5.5)	6 (2.9)	0.14986	18 (5.1)	9 (3.8)	0.42952	27 (4.6)
Follow up	14 (5.8)	5 (3.9)	0.41222	13 (6.2)	6 (3.8)	0.4179	19 (5.2)
Other indications	27 (7.1)	29 (13.9)	0.00634	40 (11.4)	16 (6.7)	0.0536	56 (9.5)
Total	383 (100)	208 (100)		351 (100)	240 (100)		591 (100)

included UGI bleeding (OR 4.5; 95% CI: 2.9–7.1), epigastric pain (OR 3.6; 95% CI: 1.3–10.2), abdominal pain (OR 1.8; 95% CI: 0.4–7.9) and gender (OR 1.8; 95% CI: 1.1–3.0).

Discussion

It is proven that upper GI endoscopy procedure is important for diagnosis and treatment of elderly patients.[8,9] As GI disease is common in the elderly and incidence increases with age, endoscopic procedures often have high yields among this group. Endoscopic procedures are generally safe in elderly patients, with complication rates that are similar to those seen in younger patients.[15]

The present study attempted to document and describe the outcomes of upper gastrointestinal endoscopy in older patients (65+ years) referred to King Fahd Central Hospital (KFCH), Jazan, South West Saudi Arabia, as no previous studies had investigated this issue in this part of KSA.

The results of this study showed mean age of patients 73.5 years, which is consistent with the life expectancy of Saudi Arabia.[2] During the twentieth century, life expectancy

Table 3. Findings of upper endoscopy among the elderly patients according to gender and age groups.

FINDINGS	GENDER			AGE GROUPS			TOTAL № %
	MALES № %	FEMALES № %	*P*-VALUE	64–74 № %	75+ № %	*P*-VALUE	
Normal	59 (15.4)	37 (17.8)	0.45326	60 (17.1)	36 (15.0)	0.4965	96 (16.2)
Esophagitis	43 (11.2)	38 (18.3)	0.01732	40 (11.4)	41 (17.1)	0.0488	81 (13.7)
Esophageal varices	77 (20.1)	25 (12.0)	0.01314	69 (19.7)	33 (13.8)	0.0614	102 (17.3)
Esophageal stricture	3 (0.8)	8 (3.8)	0.00854	6 (1.7)	5 (2.1)	0.7414	11 (1.9)
Esophageal mass	9 (2.3)	7 (3.4)	0.4654	5 (1.4)	11 (4.6)	0.0203	16 (2.7)
Esophageal ulcer	21 (5.5)	13 (6.2)	0.70394	12 (3.4)	22 (9.2)	0.0031	34 (5.8)
Hiatus hernia	39 (10.2)	36 (17.3)	0.01278	38 (10.8)	37 (15.4)	0.0989	75 (12.7)
Gastritis	80 (20.9)	49 (23.6)	0.45326	76 (21.7)	53 (22.1)	0.9044	122 (21.8)
Hypertensive gastro.	7 (1.8)	8 (3.8)	0.13622	12 (3.4)	3 (1.2)	0.0989	15 (2.5)
Gastric ulcer	27 (7.0)	10 (4.8)	0.28462	18 (5.1)	19 (7.9)	0.1706	37 (6.3)
Gastric mass	21 (5.5)	7 (3.4)	0.24604	14 (4.0)	14 (5.8)	0.2983	28 (4.7)
Duodenitis	27 (7.0)	4 (1.9)	0.00758	12 (3.4)	19 (7.9)	01596	31 (5.2)
Duodenal ulcer	60 (15.7)	19 (9.1)	0.02574	52 (14.8)	27 (11.2)	0.2113	79 (13.4)
Gastric erosion	14 (3.7)	5 (2.4)	0.41222	9 (2.6)	10 (4.2)	0.2801	19 (3.2)
Duodenal erosion	2 (0.5)	11 (5.3)	0.0000	7 (2.0)	6 (2.5)	0.6818	13 (2.2)

Table 4. Association between clinical variables and endoscopic findings.

ENDOSCOPIC OUTCOME/ VARIABLE	OR (95% CI)
Gastritis	
Gender (male)	1.17 (0.78–1.75)
Age group (85+)	1.03 (0.69–1.53)
Epigastric pain	2.23 (1.29–3.83)
Abdominal pain	1.51 (0.43–5.25)
Non-steroidal anti-inflammatory drugs (NSAIDs)	3.86 (0.48–30.7)
Khat chewing	1.1 (0.41–2.91)
Esophageal varices	
Gender (male)	1.8 (1.1–3.0)
Age group (85+)	1.5 (1.0–2.4)
Epigastric pain	3.6 (1.3–10.2)
Abdominal pain	1.8 (0.4–7.9)
Khat chewing	1.2 (0.4–3.6)
UGI bleeding (hematemesis/ melena)	4.5 (2.9–7.1)

rose dramatically amongst most of the world's populations, developing and developed, from around 50 to over 75 years. This increase can be attributed to a number of factors, including improvements in public health, nutrition and medicine.[3]

The results of the study revealed that the most common indication for upper gastrointestinal endoscopy was upper GI bleeding (139, 23.5%). This is consistent with published literature, which has documented the increasing age of the population presenting with acute upper GI bleeding. In previous studies, 35%–65.2% of all patients who presented with acute upper GI bleeding were aged over 60 years.[16–18]

Epigastric pain was the indication for upper GI endoscopy in 11.3% of our patients, a very low figure compared with previous studies of elderly populations.[9,19] The very low rate may be attributed to differences in definitions and methodologies between the different studies.

Gastritis constituted the most common finding for the procedures we studied, with no significant differences between males (20.9%) and females (23.6%). Studies from Saudi Arabia and other countries for the general population have found the same pattern of gastric disease.[19,20] In contrast to other studies,[9,15] esophageal varices constituted a high proportion of findings (17.3%) among the studied patients. The high prevalence of esophageal varices in our study may be associated with the high prevalence of hepatitis infections in the Jazan region.[21,22]

Normal endoscopy was more common in females (17.8%) compared to males (15.4%). This pattern is common and found elsewhere.[20] In our elderly population and in contrast to other studies,[23,24] the most common cause of UGI bleeding was esophageal varices.

The multivariate analysis showed that, amongst elderly patients, factors that were associated with increased risk of gastritis were epigastric pain and abdominal pain. Khat chewing was not associated with gastritis risk, a finding in contrast to other studies that have suggested khat chewing is associated with gastritis.[25] Khat chewing is a common habit among all segments of the Jazan population, with prevalence estimated at 33.2%.[26] Moreover, epigastric pain, abdominal pain and male gender were associated with increased findings of esophageal varices.

There are limitations to the present study; first, because the study relied on the available secondary data in the medical records department, it was not possible to collect detailed information about complications of the procedures. Second, this was a cross-sectional study without long-term follow-up. Therefore, the clinical associations of endoscopic findings should be interpreted with caution. Finally, indications for gastroscopies have changed over the last 20 years and the analysis should be interpreted and understood in the context of the study's period in time. Despite these limitations, the study will add to the body of knowledge regarding upper GI diseases among the elderly in Saudi Arabia, and in particular in the Jazan region since it is the first study conducted to document this issue.

Conclusions

In conclusion, with advancing age many upper gastrointestinal diseases become more prevalent. The most common indications for upper gastrointestinal endoscopy in our study were UGI bleeding, epigastric pain and acid peptic disease. Gastritis and esophageal varices were found to be the main findings of upper GI endoscopy among the Jazan elderly population.

Author Contributions

Conceived and designed the experiments: HA. Analyzed the data: HA. Wrote the first draft of the manuscript: HA. Agree with manuscript results and conclusions: HA. Developed the structure and arguments for the paper: HA. Made critical revisions and approved final version: HA. Author reviewed and approved of the final manuscript.

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