

Research ArticleAvailable Online at: www.ijphr.com

**International Journal of
Pharmaceuticals and
Health care Research**

ISSN: - 2306 – 6091

**UPPER GASTROINTESTINAL ENDOSCOPY FINDINGS AT GONDAR
UNIVERSITY HOSPITAL, NORTH-WESTERN ETHIOPIA:
AN EIGHT YEAR ANALYSIS**

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Abstract

Upper gastrointestinal symptoms are a common complaint in the clinical setting in the Northern part of Ethiopia. Until recently, patient assessment and treatment relied basically on assumptions and experience acquired from other parts of Ethiopia. Hence, this study aims to assess endoscopic findings in referred patients to Gondar University Hospital, Northwestern Ethiopia. It is a record based descriptive study undertaken by using data collected by health professionals at the endoscopy unit in the Gondar University Hospital. Patient data collected from April 30, 2005 to May 1, 2013 was investigated. Analysis was carried out using the SPSS version 16.0. A total of 1,310 patients had upper gastro intestinal endoscopic examinations. Esophago-gastro-duodenal pathology was detected in 1093 (83.4%) patients. Duodenal ulcer was the commonest endoscopic finding documented in 333(25.4%) cases. Chi-square analyses showed gastric outlet obstruction and duodenal findings significantly associated with gastro esophageal reflux disease. The study has discovered the pattern of upper gastrointestinal pathologies in patients referred to University of Gondar Hospital. Duodenal ulcer was found to be the commonest pathology leading to clinical symptoms to be followed by atrophic gastritis, gastric outlet obstruction, gastro esophageal reflux disease and gastritis in decreasing order.

Keywords: Gastrointestinal, Endoscopy, Duodenal ulcer.

Received on- 22.05.2015 ;

Revised and accepted on- 29.05.2015;

Available online- 02.06.2015

Introduction

Upper gastro intestinal symptoms are common health problem in communities at different parts of the world. They considerably affect the quality of life and psychological wellbeing of that affected.^{1,2} It has been found to result in high healthcare resource utilization and significant costs due to lost work productivity, with symptomatic patients having an increased odd of work absenteeism.

It is estimated that GI symptoms are responsible for 15-20% of general practitioner visits, hospital admissions and drug use.³ Many of the gastro-

intestinal symptoms are related to the upper tract disorders, particularly the lower esophagus and stomach, involving damage to the lining of the mucosa.⁴ Damage may occur due to excessive exposure to digestive fluids (stomach acid, pepsin, and bile), long-term use of medications that irritate the digestive tract, Helicobacter pylori infection and unhealthy habits (heavy alcohol use, smoking). It is evident that clinical symptoms alone cannot reliably make the diagnosis of upper gastrointestinal pathologies and their complications. Gastrointestinal endoscopy has long been used and

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remained to be the backbone in the diagnosis of these conditions. Moreover, it plays a significant role in the management and follows up of most upper gastrointestinal pathologies. In light of the expanding technological abilities, the role of endoscopy will be even more pronounced in the future.⁴

In developing countries like Ethiopia, where other forms of investigation modalities are limited, upper gastrointestinal endoscopy remains the investigation of choice in making diagnosis of upper gastrointestinal pathologies.⁵⁻⁸

All upper gastrointestinal symptoms are presumably prevalent in North Ethiopia. However, the prevalence and impact are not clearly identified. Most data are obtained from selected samples derived from patients presenting to health care institutions with clinical symptoms. Hence, the study aims to analyze the upper gastrointestinal endoscopic examinations carried out in the endoscopy unit at the Gondar University Hospital from April 30, 2005 to May 1, 2013 and to estimate the prevalence of upper gastrointestinal diseases in the examined patients.

Methods

This is a descriptive study conducted by reviewing the registration and charts available at the endoscopy unit of the University of Gondar Hospital. The study looked at records of patients who visited the unit from April 30, 2005 to May 1, 2013.

The Gondar University Hospital is the largest and the oldest referral and teaching hospital in the Amhara National Regional State of Ethiopia. It is the only center providing endoscopy service in the region during the study period.

All Endoscopic procedures were conducted by trained surgeons and physicians. Olympus flexible fiber-optic endoscope model GIF-E 600 was used for the procedure during the study period. Informed consent was obtained from all patients before the procedure. The examination was performed using local anesthetic lidocaine or xylocaine sprays on oro-pharyngeal region in all cases. Procedures were conducted on empty stomach in the morning. The endoscopist in charge documented endoscopic findings of each patient in a prepared form.

Data registration forms, prepared to include the variables documented in the registration books and patients' charts, were used for data collection. Socio-demographic data, indications for upper gastrointestinal endoscopy and endoscopic findings were taken from upper gastro intestinal registration book. Data collectors oriented on how to access and retrieve information from the records collected the required data. This data was then entered and analyzed by SPSS version 16.0 statistical package for windows (SPSS Inc, Chicago). Chi square test was conducted to compare proportions and a *p*-value < 0.05 was taken as statistically significant.

The study was conducted after obtaining ethical approval from the Institutional Review Board of the University of Gondar. A prior written permission was also obtained from Hospital Medical Director's office to access the endoscopy unit. All record reviews of the patients' records were kept confidential.

Results

A total of 1,310 patients had endoscopic examination from April 30, 2005 to May 1, 2013. Mean age was 38.09 years (± 15.1) and 50.9% were male (Table No. 01). Nearly half of the patients 659 (50.3%) are below the age of 35 years while 462 (35.2%) lie between 35-55 years. Only 189 (14.4%) found to be above 55 years of age (Table No. 01).

Fifty two per cent of the patients were from urban setting showing no significant difference between urban and rural dwellers referred for endoscopic examination. Dyspepsia, which accounted for 704 (53.8%) cases, was found to be the most common indication for undergoing upper gastro intestinal endoscopy. This was followed by epigastric pain 276 (21%) and vomiting 242 (18.5%). Upper gastro-intestinal bleeding, suspicion for esophageal varices and dysphagia were the other indications in decreasing frequency (Table No. 02).

Eighty percent of the patients had identifiable cause for their clinical symptoms while the remaining had normal endoscopic findings. Duodenal ulcer was the most frequently recovered pathology documented in 333 (25.4%) patients. Males 208 (62.4%) were more affected than females 125 (37.6%) with ratio of 1.7:1. However, atrophic gastritis detected in 199 (15.2%) patients showed

slight female predominance (1.12:1) Table No. 03. Non ulcer dyspepsia with normal looking mucosa and without any evidence of pathology was seen in 167 (12.7%) of the patients.

A total of 103 (7.9 %) cases were detected to have endoscopic features of malignancies in the esophagus and the stomach. Esophageal cancer showed slight predominance in prevalence than gastric cancer (4.3% vs 3.6%). Majority of the esophageal lesions were located at the mid esophagus and dominating in the female. Contrary to this, gastric cancer was found to be affecting more frequently the male patients. Close to 50% of the malignant lesions, both in esophagus and the stomach were detected in patients less than 50 years of age.

One hundred and eleven (8.5%) of the patients presented with prior upper gastrointestinal bleeding as a main indication for the procedure. Esophageal varices (34.2%), tumors (33.3%), duodenal ulcer (24.3%) and gastric ulcers (8.1%) were detected in decreasing order in this group of patients.

Gastric outlet obstruction (GOO) as a result of peptic ulcer disease accounted for 204 (15.6%) cases with male predominance. A multiple category chi square test performed on patient with GOO and duodenal findings related to gastro esophageal reflux disease showed statistically significant differences ($p < 0.001$).

Two hundred seventy (20.6%) of the cases were treated with Standard H-Pylori eradication course. Surgery was indicated and recommended in 297 (22.6%) cases for Gastric outlet obstruction and other esophageal, gastric and duodenal lesions.

Discussion

Ethiopia is the second highly populated country in Africa. It inhabits a population with varying environmental regions and wide ethnic diversities with different culture and social habits. The Gondar University Referral Hospital serves more than 5 million people in North Western part of the country and others referred from the nearby regions. Upper Gastrointestinal Endoscopy service became available in the Hospital since 2000. This study is the first documentation of its impact on the local health system since its implementation.

The sex and age composition of patients with upper gastrointestinal symptoms were assessed. The sex distribution was nearly comparable (Males 50.9 %). Forty nine percent of the cases were between 20 and 70 years of age with a mean age of 38.09 and SD of ± 15.1 . Positive endoscopic findings were detected more in males and at a younger age than females. This is in agreement with many studies, which suggest that upper gastrointestinal symptoms are becoming a common problem in males.^{5, 6, 9-11}

The most common indication for upper gastrointestinal endoscopy in patients between 15-50 years of age was dyspepsia (54.4%). This was in consistency with many studies conducted elsewhere.¹²⁻¹⁵ However, differences were noted compared to studies conducted in Andover, Hampshire and Lagos, Nigeria where lower prevalence was reported and Shanghai, China with much higher prevalence.^{12, 13, 15, 16} This could be explained by differences in the communities related to psychological and genetic factors; diet and lifestyle, H. pylori and other prior GI infections.^{17, 18}

Duodenal ulcer, being the most frequently recovered duodenal pathology, occurred at a higher rate in our study compared to western and other African countries. It affected almost twice males than females. Although the prevalence and incidence of peptic ulcer diseases have declined worldwide for the past 2 decades, it remained almost constant in our setup compared to previous studies.^{19, 20} This could be explained by the higher H. Pylori infection rate, dietary and other related environmental factors in the study area.²¹ The higher frequency in males however could not be explained by the current study and requires further investigations.

The higher rate of esophageal varices (34.2%) among upper gastrointestinal bleeders is almost similar with studies conducted in other African countries, which have reported esophageal varices as the major cause of upper gastrointestinal bleeding.^{11, 22, 23} However, it is contrary to findings in most western studies where peptic ulcer disease has been identified as the commonest cause of upper gastro intestinal bleeding.^{9, 24, 25} The difference could be explained by the high prevalence of schistosomiasis and viral infections

of the liver in our set up.²⁶ The high rate of upper gastrointestinal bleeding from tumors (33.3%) could be explained by late presentation of patients with ulceration and tumor necrosis.

Esophageal and gastric mass lesions, with endoscopic findings suggesting malignancy, were found in 4.3% and 3.6% of the patients respectively. This is inconsistent with other studies conducted in Addis Ababa Black Lion Hospital.¹⁴ About a third of both the esophageal and gastric mass lesions occurred in patients below the age of 50 years. The reason why these malignancies occurred in younger ages than indicated in the literature required future investigation.

Standard H. pylori eradication therapy was instituted to 269 (20.5%) cases while surgery for gastric outlet obstruction, lesion in the esophagus, stomach and duodenum was recommended in 297 (22.7%) of patients.

Conclusions

The study has shown the pattern of upper gastrointestinal pathologies in this part of the country. Duodenal ulcer was found to be the commonest pathology of the upper gastrointestinal

disorders leading to clinical symptoms to be followed by atrophic gastritis, gastric outlet obstruction, gastro-esophageal reflux disease and gastritis in decreasing order. It was also noted that young age groups are affected by both esophageal and gastric carcinoma in the study area. However, this is a hospital based study which may not reflect the actual prevalence in the community. Therefore, further community based study is recommended.

Competing interests

The authors declare that they have no competing interests.

Authors' contributions

SAW and MOY conceived, designed and coordinated the study, participated in data acquisition, carried out data record review, analysis and interpretation, drafted the manuscript. SYT, GMG and ZA participated in designing the study, review of the manuscript, and analysis. All the authors have read and approved the final manuscript.

Acknowledgements

The Authors are grateful to the University of Gondar Hospital, Ethiopia.

Table No. 01: Age sex distribution

Age	Frequency	Male	Female
10-14	82	33	49
15-19	213	107	106
20-24	180	97	83
25-29	126	71	55
30-34	129	81	48
35-39	130	55	75
40-44	108	46	62
45-49	114	54	60
50-54	66	29	37
55-59	79	40	39
60-64	38	27	11
65-69	31	20	11
70-74	8	5	3
75-79	5	2	3
80-84	1	1	0
85+	0	0	0
Total	1310	668	642

Table No. 02: Indication for endoscopy

Indications	No. of Cases	Per cent
Epigastric Pain	276	21.0
Dyspepsia	704	53.8
Dysphagia	24	1.8
Vomiting	242	18.5
Hematemesis	60	4.6
Miscellaneous	4	0.3
Total	1310	100.0

Table No. 03: Endoscopy finding by sex

Finding	Male	Female	Total	%
Normal	85	132	217	16.6
Candidiasis	2	7	9	0.68
Esophagitis	9	19	28	2.1
Oesophageal Varices	25	13	38	2.9
Oesophageal Mass	16	40	56	4.3
GERD	28	49	77	5.9
Atrophic Gastritis	94	105	199	15.2
Gastric Ulcer	17	8	25	1.9
Gastric Mass	30	17	47	3.6
Duodenitis	24	18	42	3.2
Duodenal Ulcer	208	125	333	25.4
Duodenal Mass	2	0	2	0.12
Gastric Out Late Obstruction(GOO)	143	61	204	15.6
Miscellaneous	19	14	33	2.5
Total	702	608	1310	100

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