# Study of the Clinical Diagnosis of Upper Gastrointestinal Disease Patterns in Fallujah Teaching Hospital-Iraq

**Ahmed Abdulkareem Faraj**

M.B.Ch. B, MD. Intermal Medicine in Fallujah Teaching Hospital / Anbar

**Abstract:** *Gastrointestinal diseases (GI) refer to diseases involving the gastrointestinal tract, namely the oesophagus, stomach, small intestine, large intestine and rectum, and the accessory organs of digestion, the liver, gallbladder, and pancreas. Diagnosis of upper gastrointestinal (UGI) diseases is often made on clinical grounds in Fallujah Teaching Hospital. Medical records of patients presenting at Fallujah Teaching Hospitals between September 2014 and August 2016 were reviewed. Data were analyzed for sensitivity, specificity, positive predictive value, and negative predictive value of clinical diagnosis using endoscopic diagnosis as a standard. Results of the study showed that males constituted 116 (53.4%) of subjects and mean age was 47 years (+ 1.29 SD). Peptic ulcer disease (PUD) constituted (68.3%) of referral diagnosis but (34.3%) of endoscopic diagnosis. PUD had the highest sensitivity value (73%) while gastritis had the least (4%). Specificity ranged from (34%) for PUD to (100%) for corrosive esophagitis. Positive predictive value ranged from (0%) (esophageal cancer) to (100%) (corrosive esophagitis) and negative predictive value ranged from (66%) for gastritis to (100%) for corrosive esophagitis. It can be concluded that the validity of clinical diagnosis in UGI conditions varied widely, and in general, there is poor agreement between clinical and endoscopic diagnoses. The study aimed to determine age and sex distribution of patients presenting for UGI endoscopy and clinical and endoscopic diagnoses patterns in patients with UGI diseases.*

**Keywords:** Upper gastrointestinal diseases, Clinical diagnosis, Patterns

## 1. Introduction

The upper gastrointestinal (UGI) diseases are leading causes of global morbidity and mortality. Peptic ulcer disease (PUD) [1], gastroesophageal reflux [2] disease and cancers [3] are leading UGI conditions and affect millions of people worldwide. Endoscopy holds an important place in the diagnosis and treatment of UGI conditions [4, 5].

It enables visualization, photography, ultrasonography, and biopsies of suspicious lesions. Upper gastro-intestinal endoscopy (UGIE) also facilitates the performance of therapeutic procedures such as UGI tract sclerotherapy, polypectomy, and gastrostomy. In Iraq and many developing countries facilities for UGIE are very rare. As a result, the diagnosis of UGI conditions is carried out solely on clinical parameters in most cases. The degree of success in the treatment of such diagnosed cases would naturally depend on extent to which the clinical diagnoses are correct, although "placebo effect" could also be responsible for some positive outcomes [6]. Incorrect diagnoses, and subsequent ineffective management, may result in increased morbidity period, economic loss to the client, and even death. To what extent are clinic-based diagnoses in UGI diseases, in the absence of UGIE, likely to be correct? What conditions are more likely to be accurately diagnosed and which ones would likely be missed without the benefit of UGIE? These questions are of practical importance to health care practice in resource constrained environments, but they have been largely left unresearched. Considering the fact that facilities for UGIE may not become widely available in many African countries in the immediate future, the research questions addressed in this study are critical to improving health care practices.

## 2. The Aim of Study

The study aimed to determine age and sex distribution of patients presenting for UGI endoscopy and clinical and endoscopic diagnoses patterns in patients with UGI diseases.

## 3. Materials and Methods

This study was conducted in Fallujah Teaching Hospital, Iraq on 218 patients who underwent UGIE during the period from September 2014 to August 2016. The entry points for UGIE procedure consisted of medical and surgical gastroenterology units of the hospital and direct referrals from other health facilities.

The medical record of each patient was reviewed and information pertinent to the objectives of the study, including referral diagnosis and endoscopic findings, were extracted using a standardized format.

To facilitate easier passage of the endoscope tube 10% xylocaine® spray was used for local throat/oropharyngeal anesthesia. During examination, patients were usually placed in the left lateral decubitus with pulse oximetry monitoring.

All anatomic regions of the esophagus, stomach and first and second parts of the duodenum were examined and endoscopic impressions were noted. Mucosal biopsies for histopathological diagnoses and Helicobacter pylori detection were obtained for all cases of esophagitis, gastritis, duodenitis, gastric ulcer, duodenal ulcer and suspected malignant lesions.

Most of the patients had UGIE as an elective procedure and informed consents were duly obtained. The endoscopy team during the period of study consisted of general surgeons and gastroenterologists.

Statistical analysis of data entry were carried out through the use of SPSS 21 program.

Chi-square (X2) analysis was used to compare the age- group distribution of relevant disease entities. Cross- tabulation of diagnosis from referral facilities (based on essentially history and physical examination, and hereinafter referred to as "clinical diagnosis") and the endoscopic diagnosis was un- dertaken and depicted in a 2 x 2 table for the analysis of cri- terion-referenced validity. Based on the cross tabulation, the degree to which the clinical diagnosis agreed with the endo- scopic diagnosis was determined for different disease entities where both diagnoses exist in the patient's medical record.

Standard epidemiological indices for assessing validity of measures–sensitivity, specificity, positive predictive value, and negative predictive values–were determined for the clinical diagnosis (in comparison with the reference standard) [6,8,9]. Applied in the context of this study, sensitivity was calculated as the proportion of respondents identified as having a specific condition by endoscopy that were similarly diagnosed on clinical ground. Specificity was calculated as the proportion of those identified through endoscopy as not having a specific condition that clinical diagnosis also did not label as having the condition.

## 4. Results

A total of (218) patients underwent UGIE during the four-year period of the study (September 2014 to August 2016). The patients consisted of 117 (53.6%) males and 101 (46.4%) females, and the mean age was 47 years (+ SD 1.29) (Table 1). While patients' age ranged from childhood to old age, those in the fifth decade of life constituted the largest cohort (22.5%), followed by those in the third and fourth decades of life (17.9% and 17.9% respectively).

**Table 1:** Age distribution of patients presented for upper gastro-intestinal endoscopy

| Age | Frequency | Percentage |
|---|---|---|
| 10-19 years | 8 | 3.6 |
| 20-29 years | 39 | 17.9 |
| 30-39 years | 39 | 17.9 |
| 40-49 years | 49 | 22.5 |
| 50-59 years | 34 | 15.7 |
| 60-69 years | 31 | 14.2 |
| 70 years and above | 18 | 8.2 |
| Total | 218 | 100% |
| Mean age | 47±1.29 | |
| Gender | Frequency | Percentage |
| Males | 117 | 53.6% |
| Females | 101 | 46.4% |

As shown in table (2), peptic ulcer constituted (68.3%) of the referral diagnosis, followed by gastric cancer (6.9%) and upper gastrointestinal bleeding (6.9%). Carcinoma consti- tuted less than tenth of the clinical diagnosis (carcinoma of the stomach (6.9%) and esophageal carcinoma (0.9%).

**Table 2:** Referral diagnosis patterns among patients with upper gastro-intestinal conditions

| Referral Diagnosis | Frequency | Percentage (%) |
|---|---|---|
| Peptic ulcer disease | 149 | 68.3 |
| Cancer of the stomach | 15 | 6.9 |
| Upper gastro-intestinal bleeding | 15 | 6.9 |
| Gastric outlet obstruction | 12 | 5.5 |
| Reflux oesophagitis | 6 | 2.7 |
| Gastritis | 5 | 2.3 |
| Oesophageal cancer | 2 | 0.9 |
| Duodenal perforation | 1 | 0.5 |
| Corrosive oesophagitis | 1 | 0.5 |
| Others | 12 | 5.5 |
| Total | 218 | 100.0% |

In terms of age distribution, patterns of duodenal and gastric ulcer were generally similar, with the highest proportion of cases occurring between the ages of 40 and 59 years (38.4% of duodenal ulcer and 38.1% of gastric ulcer) as shown in figure (1). Statistical analysis (X2) showed no significant difference in the pattern of age distribution of duodenal and gastric ulcers (p=0.905). A higher proportion of cases of advanced gastric cancer occurred in patients who were 60 years of age and above (53.4%) compared to early gastric cancer cases (35.3%) as illustrated in figure (2). There was a statistically significant difference in age distribution between the two types of gastric cancer cases (p<0.011). While almost all cases of early gastric cancer (94.1%) occurred before 70 years of age, more than a third of late cancer cases (34.5%) occurred above the age of 70 years. The peak of the early gastric cancer cases was in the 7th decade of life (29.4%) compared to the 8th decade in late gastric cancer cases (24.1%).
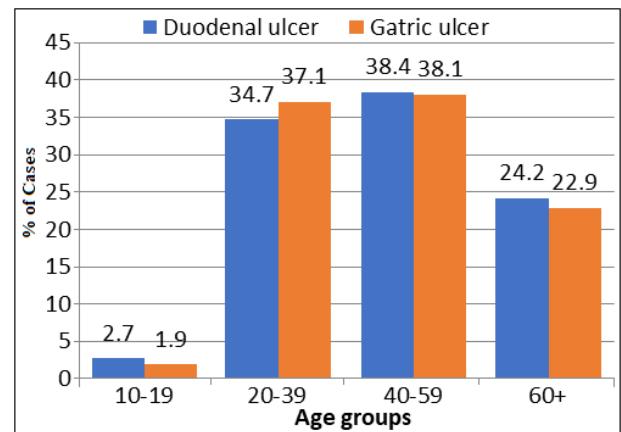


**Figure 1:** Percentage distribution of age of patients endo- scopically-diagnosed with duodenal ulcer and gastric ulcer in Fallujah Teaching Hospital
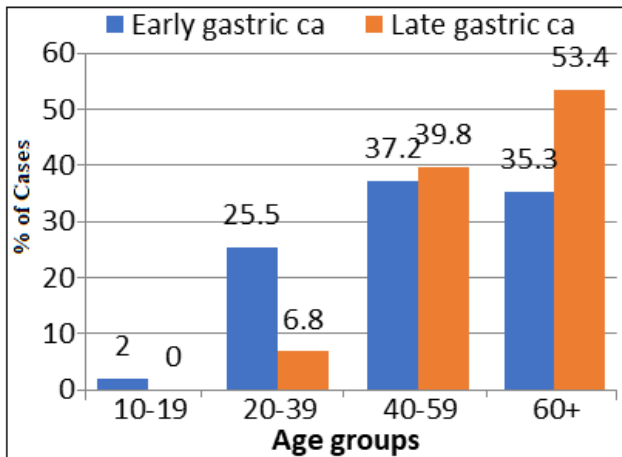
**Figure 2:** Percentage distribution of age of patients endo-scopically-diagnosed with early gastric cancer and advanced gastric cancer in Fallujah Teaching Hospital

Among the non-cancerous conditions diagnosed at referral facilities on clinical ground, peptic ulcer had the highest sensitivity level (73%), but the specificity was quite low (36%). Corrosive esophagitis, which had the highest level of specificity (100%), had only a sensitivity of (50%), while gastritis had sensitivity of (4%) and specificity of (99%) see table (4). Cancer of the stomach had sensitivity of (32%) and specificity of (96%), while esophageal cancer had sensitivity of (0%) and specificity of (100%).

**Table 4:** Relationship between referral and definitive diagnosis in upper GI conditions

| Disease condition | Clinical referral | Definitive diagnosis (endoscopic findings) | | Sensitivity % | Specificity % | Positive predictive value % | Negative predictive value % |
|---|---|---|---|---|---|---|---|
| | | Disease present n (%) | Disease absent n (%) | | | | |
| Peptic ulcer | Present | 53(24.3%) | 96(44%) | 73 | 34 | 36 | 71 |
| | Absent | 20(9.1%) | 49(22.4%) | | | | |
| Gastric outlet obstruction | Present | 6(2.7%) | 6(2.7%) | 40 | 97 | 50 | 96 |
| | Absent | 9(4.1%) | 197(90.3%) | | | | |
| Gastritis | Present | 3(1.4%) | 2(0.9%) | 4 | 99 | 60 | 66 |
| | Absent | 73(33.4%) | 140(64.2%) | | | | |
| Reflux esophagitis | Present | 2 (0.9%) | 3 (1.4%) | 5 | 98 | 40 | 81 |
| | Absent | 40 (18.3%) | 173 (79.3%) | | | | |
| Corrosive esophagitis | Present | 1 (0.5%) | 0 (0%) | 50 | 100 | 100 | 100 |
| | Absent | 1 (0.8%) | 216 (99.1%) | | | | |
| Stomach cancer | Present | 7(3.2%) | 7(3.2%) | 32 | 96 | 50 | 93 |
| | Absent | 15(6.9%) | 189(86.7%) | | | | |
| Esophageal cancer | Present | 0(0%) | 1(0.5%) | 0 | 100 | 0 | 99 |
| | Absent | 2(0.9%) | 215(98.6%) | | | | |

## 5. Discussion

This study was based on 218 patients who presented for UGIE over a 4-year period in Fallujah Teaching Hospital.

We sought to determine the usefulness and limitations of clinical approach only in the diagnosis of various upper gastro-intestinal conditions by comparing clinic-based diagnosis with endoscopy. Criterion-referenced validity has been described as "the best and most obvious way of appraising validity" [6].

Our findings with regard to peptic ulcer as the most common UGI condition and the difference in the age distribution of early and late gastric cancers are in line with current knowledge [1,5,10]. The finding that 14 patients (6.4%) were endoscopically normal compares favorably with previously reported results from endoscopic evaluation of UGI patients, and these persons may have been suffering from functional dyspepsia or non-ulcer dyspepsia [11,12].

The prevalence of gastric carcinoma recorded in our endoscopy cases (11.8%) was higher than that recorded in some previous studies, but when considered with the occurrence of other solid tumors in Fallujah Teaching Hospital, the prevalence rate is comparatively low.

Furthermore, our findings in the cases of gastric cancers showed a higher proportion of cases in early stages (50.0%), where radical "curative" surgery could be effective, compared to those in the late stages in contrast to previously reported works, where most cases of gastric were diagnosed at late stages [14,15,16]. The difference can be directly attributable to the use of endoscopic procedure that facilitated early detection in our cases unlike other studies that reported basically on clinical manifestations and diagnosis.

A comparison of the pattern of referral and UGIE diagnosis showed a wide difference in the prevalence attributed to many conditions. In the case of PUD, the rate of referral diagnosis (68.3%) was twice that of endoscopic diagnosis (34.3%). On the other hand, whereas gastric cancer constituted 6.9% of diagnosis on clinical ground, it constituted 11.8% of UGIE findings. This pattern indicates poor concurrence between clinical (referral) and endoscopic diagnoses. The generally low level of sensitivity and positive predictive value obtained in the study also highlights the poor association between clinical and UGIE diagnoses. This may possibly be a reflection of combination of two factors: the clinical

acumen of the individual medical practitioner and the limitations inherent in the application of clinic-based judgment as the sole basis of diagnosis in UGI conditions. Several limitations of clinic-based diagnosis were obvious from our findings. Firstly, clinical referral diagnoses are generally non-specific in nature. This may be clinically difficult to distinguish precisely between several conditions, for example, between acute gastric ulcer, gastritis, gastroduodenitis, or even ulcerated gastric cancers. In comparison, UGIE based diagnosis provided far richer clinical information, with potential for guiding more precise and prompter treatment. Secondly, the potential of clinic-based diagnosis to identify some conditions, such as gastric cancer, in their early and "treatable" stages is very poor. Thirdly, diagnosis made on clinical ground may simply be inaccurate in many cases as reflected by the various validity indices used in the study. The findings from our study have implications for health care situation in Fallujah Teaching Hospital: the poor association between clinical diagnosis and endoscopy findings strongly highlights the need to improve health infrastructure if improved health care service delivery and health outcomes are to be achieved. This study provides an evidence-based platform for health advocacy in this regard. The use of endoscopy for UGI conditions, by increasing the accuracy of diagnosis, would facilitate prompt and accurate treatment as well as reduce morbidity period and mortality. It is important to also note that availability of UGIE would result in cost effectiveness in case of management as the incidence of failed treatment resulting from "empirical" non-evidence-based approach would be reduced.

## References

[1] Graham DY, Rakel RE. Fendrick AM, Go MF, Marshall BJ, Peura DP, Scherger JS. Scope and consequences of peptic ulcer disease: How important is asymptomatic Helicobacter pylori infection? Postgraduate Medicine 1999; 105: 106119.

[2] **van Doorn LJ, Figueiredo C, Sanna R, Plaisier A,** Schneeberger P, de Boer W, et al. Clinical relevance of the cagA, vacA, and iceA status of Helicobacter pylori. Gastroenterology 1998; 115: 58‑66.

[3] Hendricks D, Parker MI. Oesophageal cancer in Africa. IUBMB Life 2002; 53: 263-268.

[4] Axon ATR, Bell GD, Jones RH, Quine MA, McCloy RF. Guidelines on appropriate indications for upper gastrointestinal endoscopy. British Medical Journal 1995; 310: 853856.

[5] Tytgat GNJ. Role of endoscopy and biopsy in the work up of dyspepsia. Gut 2000; 50 (Suppl. 4): 13-16.

[6] Abramson JH, Abramson ZH. Validity. In: Survey methods in community medicine. Edinburgh, Churchill Livingstone. 5th ed. 1999: 185-204.

[7] Schiller KFR, Cockel R, Hunt RH, warrant BR. Atlas of gastrointestinal endoscopy and related pathology. London, Blackwell Science Ltd. 2002. 19 – 226.

[8] Lequesne M, Wilheim F. Rating indexes: sensitivity, specificity and predictive value or reading the signs: Nostradamus in the 20th century. In: Methodology for the clinician. Compendium and glossary. Basel, Eular Publishers 1989: 48-55.

[9] Last JM, ed. A dictionary of epidemiology. 3rd ed. New York, NY: Oxford University Press; 1995.

[10] Ballinger A, Smith G. COX‑2 inhibitors vs. NSAIDs in gastrointestinal damage and prevention. Expert Opin Pharmacother 2001; 2: 31‑40.

[11] Harvey RF, Salih SY, Read AE. Organic and functional disorders in 2000 gastroenterology outpatients. Lancet 1983: 632-4.

[12] Shennak MM, Tarawneh MS, Al-Sheikh TM. Upper gastrointestinal disease in symptomatic Jordanians. A prospective endoscopic study. Annals of Saudi Medicine 1997; 17: 471-474.

[13] Badoe EA. Archampong EQ and J.T.da Rocha-Afodu.. Principles and practice of surgery including pathology in the tropics. Ghana Publishing Corporation 2000; 570-602.

[14] Ajao QG. Gastric carcinoma in a tropical African population. East Africa Medical Journal 1982; 59: 70-5.

[15] Fiorucci S, Santucci L, Gresele P, Faccino RM, Del Soldato P, Morelli A. Gastrointestinal safety of NO‑aspirin (NCX‑4016) in healthy human volunteers: A proof of concept endoscopic study. Gastroenterology 2003; 124: 600‑7.

[16] Correa PP, Haenszel W. Epidemiology of gastric cancer. In: Correa P, Haenszel W (eds). Epidemiology of cancer of the digestive tract, Vol. 2.Hague: Mattinus-Niijhoff, 1998: 58– 84.