



## Endoscopic Findings in Diabetic Patients with Dyspepsia in Al-Ramady General Hospital

Author

**Dr Hafed I Hussein (MD)\***

\*Ramadi Teaching Hospital, Internal Medicine Dept, AL-Anbar Health Directorate, Iraq

### Abstract

**Objectives:** To understand the occurrence of dyspepsia in patients with diabetes mellitus. Also to understand symptoms overlapped from both diseases.

**Patients and Methods:** A total of 56 diabetic patients; 19 (34%) type I, and 37 (66%) type II were considered in this study according to the comparative clinical features of types I and II.

**Results:** Type I diabetes mellitus patients are found to be more likely to contract esophagitis and gastritis, gastric stasis and pre-pyloric ulcer. On the other hand type II diabetes mellitus patients are found to be more likely to contract cancer of the stomach, multiple esophageal ulcer, pyloric ulcer, antral gastritis and duodenal ulcer and gastro-duodenitis.

**Conclusion:** Patients with diabetes mellitus duration of less than 10 years are more likely to contract esophagitis and gastritis, duodenitis, gastric stasis and multiple esophageal ulcers, while patients with diabetes mellitus duration more than 10 years are found to be more likely to contract pyloric ulcer and antral gastritis and duodenal ulcer.

**Keywords:** Diabetes mellitus DM; Dyspepsia; Endoscopic findings.

### Introduction

Functional dyspepsia refers to a persistent or recurrent dyspepsia for which diagnostic investigations (including endoscopy) has not determine an obvious organic cause of symptoms<sup>1</sup>.

Health care professionals used the term dyspepsia to refer to a wide range of upper gastrointestinal disorders<sup>2</sup>. This medical terminology believed to lack clarity about its proper definition and that leads to more medical problems in the diagnosis process of diseases that have symptoms overlapped with dyspepsia. Diabetic patients expected to approach 245 million worldwide<sup>3</sup>. This proportion of the population is going to be

the most affected since they complains symptoms overlapped with that of dyspepsia.

The prevalence of dyspepsia is mostly higher in women than men and surprisingly declines slightly with age<sup>4,5</sup>.

Only half of patients seeking medical attention for those symptoms most often within 6 months of their onset<sup>6</sup>

Dyspepsia may be caused by a number of disorders including GIT, systemic diseases like diabetes mellitus, thyroid disease, hyper parathyroidism, adrenal insufficiency, renal insufficiency and hyper calcaemia, hepatic and pancreatic diseases, drug like NSAID, corticosteroid, and psychological anxiety and depression<sup>1</sup>.

Alarm symptoms in dyspepsia include: weight loss, anaemia, vomiting, haematemesis and/or melaena, dysphagia, palpable abdominal mass especially in those patients over 55 years old, new dyspepsia and younger patients should be seriously considered<sup>6</sup>.

In long term type I diabetes mellitus gastrointestinal tract complications include acute gastric dilatation, or erosive gastritis causing vomiting of blood or coffee-ground materials particularly in diabetic ketoacidosis<sup>7</sup>.

The occurrence of dyspepsia in patients with diabetes mellitus was the main concern of many researchers with the aging of diabetes population, it has become clear that diabetes affects several organ systems including the gastrointestinal system. Consequently complication rate from diabetes are also increasing<sup>8</sup>.

Diabetic gastroparesis should be suspected clinically if the patient has upper gastrointestinal symptoms as blood glucose level become to control. This manifested by nausea, early satiety, post prandial pain and vomiting<sup>1</sup>.

The diagnosis of gastroparesis should begin with an upper GIT endoscopy to exclude primary mucosal disease or mechanical causes of obstruction<sup>9</sup>. Further evaluation of gastric emptying with radio isotopic study should be performed<sup>9,10</sup>.

Diabetic autonomic neuropathy is a common complication of diabetes mellitus. It can manifest in 20-60% of patients<sup>9,10</sup>. Development of gastrointestinal disease tend to be more common and severe in diabetic patients compared to non diabetic patients<sup>11,12</sup>.

Esophageal dysmotility resulting from autonomic neuropathy can lead to hypotonia and incompetence of lower esophageal sphincter causing stagnation of food in esophagus due to diminished peristaltic activity. Those mechanisms together with diabetic gastroparesis and transient lower esophageal sphincter relaxation can precipitate pathological gastro esophageal reflux and consequent reflux esophagitis<sup>13,14</sup>.

Reflux esophagitis is common in diabetic patients;

high percent of reflux symptoms do not have a great diagnostic value in establishing reflux esophagitis<sup>15</sup>.

Antwi, et al (2003) concluded that the high percentage of duodenal ulcer in both male and female diabetic patients can be interpreted in terms of mechanism of diabetes mellitus that affect every segment in the gastrointestinal tract<sup>16</sup>.

Pradana, S (1999) showed that not all dyspepsia in diabetic patients was caused by gastroparesis<sup>17</sup>.

Nasrul<sup>18</sup>, Z (2003) reported the result of the endoscopy of patients with upper gastrointestinal tract dysmotility in the form of gastrointestinal reflux (GER) and bile reflux gastritis, etc, and the cause of the condition due to diabetes mellitus<sup>17,18</sup>.

Magdy<sup>16</sup> El-Salhy (2004) shows that diabetes affects several organ systems including the gastrointestinal (GI) system and the prevalence of such symptoms varied from 22.1-76%.

Although the origin of dyspepsia in diabetic patients still debatable, the occurrence of dyspeptic symptoms in patients with diabetes mellitus found to be higher than that of non-diabetic patients<sup>19</sup>.

With regard to diabetes mellitus type 2, dyspepsia was observed in 71% of patients considered by a study carried out by Osipenko<sup>20</sup>, et al., 2013.

### Materials and methods

This prospective study was carried out in AL-Ramadi General Hospital– Endoscopy Department, between December 2003 till July 2004.

56 diabetic (19 (34%) type I, and 37 (66%) type II) according to the comparative clinical features of types I and II(4) were examined. Out of the 56 patients, 30 (54%) were males and 26 (46%) were females. Duration of diabetes mellitus was classified into two groups; below 10 years, and above 10 years for all patients.

All patients were interviewed regarding their upper gastrointestinal symptoms and completed a structural questionnaire. The following symptoms which may indicate the presence of gastrointestinal (G.I.) tract disease were

reviewed; upper abdominal pain, nausea, vomiting, heart burn, early satiety, dysphagia, acid regurgitation, constipation, haematemesis and melena. None of the examined patients had diseases other than D.M. or surgery or drug induced than G.I.T. disease.

The patients were subjected to upper gastroendoscopy. They were examined in the morning after overnight fasting for at least 6 hours, using endoscopic procedure, Pantax FG24 with scope disinfection gluteral dehydrate 2% for 10-15 minutes with oral Lidocaine spray as local anesthesia unless there are contraindication for detection of organic disease within the period stated above. Another 62 (31 (50%) male and 31 (50%) female) non-diabetic patients attended the Endoscopic Unit for the same purpose of the study were studied.

The age and sex of patients, type of diabetes mellitus, duration of diabetes mellitus were used as criteria for comparison.

The relation of these parameters with the development of upper gastrointestinal disease that causes dyspepsia has been investigated.

The calculated t-value is compared with the tabulated t-value at two-tailed 0.05 level of significance. If the calculated t-value is greater

than the tabulated t-value at this level, then the result of the t-test is considered to be significant and hence there is an essential difference between the two; means, percentages or proportions.

### Results

Table 1 shows the number and percentages of patients according to the findings of the endoscopy with respect to their sex. The t-test for comparison of two percentages has been used in order to detect any significant differences between the findings with respect to sex. P-values below 0.05 indicated a significant differences.

Table 2 shows the endoscopic findings distributed according to whether the patient is already a diabetic patient or not.

The duration of diabetes mellitus has been classified into two categories; less than ten years, and 10 years or above. The cases of diabetic patients allocated to the findings of endoscopy according to the duration of the disease, table 3.

Diabetes mellitus is classified into two groups; type I and type II. The patients are allocated to the findings of the endoscopy according to the type of the diabetes mellitus, table 4.

**Table 1:** Endoscopic findings according to sex of the diabetic patients.

Disease	Male		Female		p- value
	No.	%	No.	%	
Normal	10	33.33	5	19.23	>0.05
Esophagitis and gastritis	-	-	1	3.85	>0.05
Reflux esophagitis	2	6.67	-	-	>0.05
Duodenal ulcer	6	20.00	8	30.77	>0.05
Duodenitis	2	6.67	1	3.85	>0.05
Gastric stasis	1	3.33	-	-	>0.05
Prolapsed gastropathy	3	10.00	1	3.85	>0.05
Gastritis	3	10.00	5	19.23	>0.05
Pre pyloric ulcer	1	3.33	-	-	>0.05
Cancer of stomach	2	6.67	-	-	>0.05
Multiple esophageal ulcer	-	-	1	3.85	>0.05
Pyloric ulcer	-	-	1	3.85	>0.05
Antral Gastritis and duodenal ulcer	-	-	1	3.85	>0.05
Gastro –duodenitis	-	-	2	7.69	>0.05
Total	30	100.00	26	100.00	>0.05

**Table 2:** Endoscopic findings for diabetic and non-diabetic groups of Patients

Disease	Diabetic		Non-diabetic		p- value
	No.	%	No.	%	
Normal	15	23.08	21	33.87	>0.05
Esophagitis and gastritis	1	1.79	-	-	>0.05
Reflux esophagitis	2	3.57	-	-	>0.05
Duodenal ulcer	14	25.00	17	27.42	>0.05
Duodenitis	3	5.36	9	14.52	>0.05
Gastric stasis	1	1.79	-	-	>0.05
Prolapsed gastropathy	4	7.14	-	-	<0.05
Gastritis	8	14.29	8	12.90	>0.05
Pre pyloric ulcer	1	1.79	-	-	>0.05
Cancer of stomach	2	3.57	-	-	>0.05
Multiple esophageal ulcer	1	1.79	-	-	>0.05
Pyloric ulcer	1	1.79	-	-	>0.05
Antral Gastritis and duodenal ulcer	1	1.79	2	3.23	>0.05
Gastro –duodenitis	2	3.57	1	1.61	>0.05
Gastric ulcer	-	-	1	1.61	>0.05
Prolapsed gastropathy and duodenal ulcer	-	-	1	1.61	>0.05
Reflux esophagitis and duodenal ulcer	-	-	1	1.61	>0.05
Total	56	100.00	62	100.00	

**Table 3:** Distribution of endoscopic findings according to the duration of diabetes mellitus

Disease	Diabetes mellitus				p- value
	<10years		≥10years		
	No.	%	No.	%	
Normal	11	29.73	4	21.05	>0.05
Esophagitis and gastritis	1	2.70	-	-	<0.05
Reflux esophagitis	1	2.70	1	5.26	>0.05
Duodenal ulcer	12	32.43	2	10.53	>0.05
Duodenitis	3	8.11	-	-	<0.05
Gastric stasis	1	2.70	-	-	<0.05
Prolapsed gastropathy	2	5.41	2	10.53	>0.05
Gastritis	3	8.11	5	26.31	>0.05
Pre pyloric ulcer	-	-	1	5.26	<0.05
Cancer of stomach	1	2.70	1	5.26	>0.05
Multiple esophageal ulcer	1	2.70	-	-	<0.05
Pyloric ulcer	-	-	1	5.26	<0.05
Antral Gastritis and duodenal ulcer	-	-	1	5.26	<0.05
Gastro –duodenitis	1	2.70	1	5.26	>0.05
Total	37	100.00	19	100.00	

**Table 4:** Distribution of endoscopic findings according to the types of diabetes mellitus

Disease	Diabetes mellitus				p- value
	Type I		Type II		
	No.	%	No.	%	
Normal	5	26.32	10	27.03	>0.05
Esophagitis and gastritis	1	5.26	-	-	<0.05
Reflux esophagitis	1	5.26	1	2.70	>0.05
Duodenal ulcer	6	31.58	8	21.62	>0.05
Duodenitis	2	10.53	1	2.70	>0.05
Gastric stasis	1	5.26	-	-	<0.05
Prolapsed gastropathy	1	5.26	3	8.11	>0.05
Gastritis	1	5.26	7	18.92	>0.05
Pre pyloric ulcer	1	5.26	-	-	<0.05
Cancer of stomach	-	-	2	5.41	<0.05
Multiple esophageal ulcer	-	-	1	2.70	<0.05
Pyloric ulcer	-	-	1	2.70	<0.05
Antral Gastritis and duodenal ulcer	-	-	1	2.70	<0.05
Gastro –duodenitis	-	-	2	5.41	<0.05
Total	19	100.00	37	100.00	

## Discussion

According to Dordaneh, et al., 2000, the symptoms of gastrointestinal tract are common among patients with diabetes mellitus (DM) as seen in tertiary care centers.

Diabetic autonomic neuropathy is a common complication of diabetes mellitus and affects every segment of the gastrointestinal tract (Antwi, et al., 2003).

Since the discovery of insulin and its introduction as treatment for diabetes in 1922, the survival rate of patients with diabetes has risen dramatically. However, with the aging of the diabetic population, it has become clear that diabetes affects several organ systems, including the gastrointestinal (GI) system. Consequently, complications rates from diabetes are also increasing. Gastrointestinal symptoms such as nausea, vomiting, heartburn, abdominal pain, diarrhea, constipation, fecal incontinence and feeling of incomplete defecation are often encountered in patients with diabetes. In studies of these phenomena, the prevalence of such symptoms varied from 22.1% to 76% (Magdy, 2004).

In this study the average age for the group of patients with diabetes mellitus is found to be 54.81 years which is in agreement with the average of a similar group considered by Antwi, et al., 2003. The percentages of type I and type II diabetes mellitus of this study were also in agreement with that of Antwi, et al., 2003.

The low percentage of reflux esophagitis found by this study can be interpreted in terms of the unknown prevalence of reflux esophagitis in diabetic patients since there is no clear idea about the incidence of reflux esophagitis in the diabetic patients in the daily life with regard to the city population; however this percentage is remarkably lower than that found by Antwi, et al., 2003.

With respect to the duration of diabetes mellitus used in this study, the percentages of all diseases identified throughout the endoscopy will be relatively lower than that found by Antwi, et al., 2003, since the duration they use is less than 5

years and over 5 years which is half the way of the duration used in this study. Such a difference will let most of the findings to be occurring in the second duration rather in the first one.

The high percentage of duodenal ulcer in both male and female diabetic patients can be interpreted in terms of the mechanism of diabetes mellitus that affect every segment in the gastrointestinal tract (Antwi, et al., 2003).

Most of the diseases identified by the use of endoscopy in this study felt in the age groups (41-50 and 51-60) which in disagreement with theory of other authors (Magdy, 2004). This is may be interpreted in terms of the way that the sample of this study has been selected. The sample may not well represent the population of diabetic patients.

Antwi et al (2003) had examined 54 diabetic patients with duration of diabetes more than 5 years. All patients completed a structured questionnaire. After overnight fasting, gastroesophageal endoscopy was performed in the morning to establish the presence of reflux esophagitis. With respect to their endoscopic findings, esophagitis has been diagnosed in 22 (41%) diabetics and 10 of them (45 %) also complained of reflux symptoms. The study concluded that reflux esophagitis is common in diabetic patients with a prevalence of 40.7%. Reflux symptoms do not have a great diagnostic value in establishing reflux esophagitis.

Pradana S (1999) found that 9 out of 32 type-2 diabetes mellitus with dyspepsia and AN having organic defect by endoscopic examination (3 gastric ulcer, 1 metaplasia, 1 erosive esophagitis, 2 erosive gastritis, 2 moderate gastritis). The author showed that not all dyspepsia in diabetic patients with AN was caused by gastroparesis.

Nasrul Z (2003) carried out a retrospective study in the period January the 1st to December the 31st 2003, for the endoscopic findings with a diagnosis of gastro esophageal reflux and bile reflux gastritis. Gastro esophageal reflux and bile reflux gastritis were found in 411 patients (19.3%), male to female ratio was 1:1.01. Nasrul concluded that patients with upper gastrointestinal tract

dysmotility complaints of dyspepsia are commonly found particularly those whose condition is caused by gastroesophageal reflux and bile reflux gastritis.

The mean age for type I and type II diabetic patients was found to be  $49.12 \pm 13.01$  and  $54.81 \pm 10.46$  respectively. Comparison between the two means revealed no significant differences ( $p > 0.05$ ); on the other hand both means were found to be significantly different from the mean age of non-diabetic group ( $p < 0.05$ ).

Out of 30 male patients, 10 (33.33%) and 5 (19.23%) out of 26 female patients had normal upper GI finding.

The highest percentage for male patients (20.00) and for female patients (30.77) are found to be corresponded to duodenal ulcer. Therefore, this is an indication that duodenal ulcer is the most frequent findings in both sex groups. Nevertheless, duodenal ulcer is found to be relatively higher in female patients than in male patients according to this data.

Although the average age for the two groups of patients (diabetic and non-diabetic) are significantly different which make the comparison of the frequencies of endoscopic findings corresponding to both groups illogic, however the percentages with regard to the total number of patients at each group has been calculated. Such a conclusion may be valid if the occurrence of the disease identified in both groups by the means of endoscopic findings is relatively age related.

If the percentage of the normal findings is excluded from both groups, then one may notice that 76.92% of the diabetic patients have positive endoscopic findings and 66.13% of the non-diabetic patients have positive endoscopic findings.

Duodenal ulcer is the most frequent endoscopic findings in diabetic (25.00%) and non-diabetic (25.81%) patients.

Mild gastritis is found to be the next frequent endoscopic findings in diabetic patients, whereas duodenitis and mild gastritis are found to be the next frequent endoscopic findings for the non-

diabetic patients.

With respect to "prolapsed gastropathy", diabetic patients are significantly contracting this finding than non-diabetic patients.

The duration of the diabetes mellitus has been classified into two groups (less than 10 years and greater than or equal 10 years). Accordingly, the distribution of the patients' frequencies at each endoscopic finding had been calculated.

The most frequent disease for the patients with diabetes mellitus less than 10 years, is found to be duodenal ulcer and is accounted for 32.43%, whereas gastritis (21.05%) is found to be the most frequent endoscopic finding for the patients with diabetes mellitus ( $\geq 10$  years).

According to the distribution of frequencies of endoscopic findings with respect to the type of diabetes mellitus for the group of diabetic patients, the duodenal ulcer is found to be the most frequent finding for both types. Duodenal ulcer accounts for 31.58% for type I, and 21.62% for type II.

Duodenitis is found to be the next frequent endoscopic finding (10.53%) for type I, while gastritis is found to be the next frequent endoscopic finding (16.22%) for type II.

## References

1. Kenneth R. MCQuaid, Dyspepsia, Gastrointestinal and Liver disease. In: Sleisenger and FORTRAN's, Chapter 7, 7<sup>th</sup> Edition, Volume 1, 2002.
2. Locke R III (1998). Prevalence incidence and nature history of dyspepsia and functional dyspepsia. *Ballever U.N. Gastroentrol* (12):435.
3. Tack J, Talley NJ, Camilleri M, et al. Functional gastroduodenal disorders. *Gastroenterology*. 2006;130:1466–79.
4. Wild S, Roglic G, Green A, Sicree R, King H. Global prevalence of diabetes: estimates for the year 2000 and projections for 2030. *Diab Care*. 2004;27:1047–53.
5. Haquem, Wyeth J, Stace N. et al. (2000). Prevalence, severity and associated

- features of gastro esophageal reflux and dyspepsia. A population based study. NZ Med J (1130):178.
6. Frier, B.M. and Fisher, B.M. Diabetes mellitus: Major manifestations of disease. In Davidson's Principle and Practice of Medicine. 19th ed., Churchill-Livingstone, Toronto, 2002, page 950.
  7. Jean D. Wilson. Principles of endocrinology. In Harrison's principles of internal medicine 2. 11<sup>th</sup> ed., McGraw-Hill Book Company, New York, 1987, page 1790.
  8. Locke, G.R (1995). Epidemiology of gastrointestinal complications of diabetes mellitus.
  9. Barkin JS, Robbins EG, Stein B. Diabetes and the GI system. In: Ellenberg and Rifkin's editors. Diabetes Mellitus. 5th ed., Lange; 1997, 1183-93.
  10. Djaj apranata I. Gastro paresis in: Symposium diabetic gastro paresis. Ujung Pandang; (1995).
  11. Krahulec B. Azaazim, Vozair Retal. Diabetick Al Polyneuropatica, Barbis lava, lufema (1999), 73-88.
  12. Marton DG, Whorwell PJ (1991). Functional bowel symptoms in diabetes, the role of autonomic neuropathy. Postgrad. Med. J; 67:991-993.
  13. Mearin F, Malageluda JR. (1995). Gastro paresis and dyspepsia in patients with diabetes mellitus. Europ J Gastroenteral Hepatol; 7:717-723.
  14. S1 Frim D. Janssens J. Vantrappen G. (1996). Transient lower esophageal sphincter and esophageal body muscular contractive response in normal humans. Gastroenterology; 110:659-668.
  15. Armstrong D (1999). Endoscopic evaluation gastro esophageal reflux disease. J Biol Med (72):93-100.
  16. Magdy El-Salhy (2004). Overview of Diabetic Gastroenteropathy. Geriatric Times.
  17. Pradana S. (1999). Gastroparesis in diabetes: When to suspect? Disampaikan Pada Jakarta Diabetes Mellitus Meeting, 19-20 November 1999.
  18. Nasrul Zubir (2003). Endoscopic diagnosis of upper gastrointestinal tract, motility disorder at M. Djamil Hospital Padang.
  19. Osipenko MF, Zhuk EA, Medvedeva OV. Diabetes mellitus and dyspepsia syndrome. Klin Med (Mosk). 2008;86(10):13-6.
  20. Osipenko MF, Zhuk EA, Medvedeva OV. Clinical characteristics of dyspepsia in patients with diabetes mellitus type 2. Ter Arkh. 2013;85(2):43-7.
  21. Antwi ch, Krahulec B, Michalkol, Strboval, Hinstakova S, Balazovjeh I, (2003). Does Diabetic autonomic neuropathy influence the clinical manifestation of reflux esophagitis? Bratisl Lek Listy; 104 (4 -5); 139 - 42.
  22. Dordaneh Maleki, MD; G. Richard Locke III, Michael Camilleri, MD; Alan R. Zinsmeister, PhD; Barbara P. Yawn; Cynthia Leibson, PhD; L. Joseph Melton III, MD (2000). Gastrointestinal tract symptoms among persons with diabetes mellitus in the community. Arch Intern Med; 160:2808-2816.