

Severe Vomiting due to Gastroparesis in Diabetic Patient; Esophago-Gastro-Duodenoscopy Findings

Kadek Sinta Dwi Saraswati¹, Desak Putu Gayatri Saraswati Seputra², I Made Suma Wirawan³

^{1, 2, 3}Department of Internal Medicine, Wangaya Regional Hospital, Denpasar, Bali, Indonesia
Corresponding author Email: [sintadwi.saraswati\[at\]gmail.com](mailto:sintadwi.saraswati[at]gmail.com)

Abstract: *Diabetes mellitus is a metabolic disease with a lot of complication. Global statistic shows that 382 million people in the world had diabetes mellitus which most cases is type II diabetes mellitus. Diabetic gastroparesis is one of serious complication of diabetes mellitus. Further studies suggest that diabetes mellitus is associated with up to 75% of gastrointestinal symptoms. Endoscopy gastrointestinal play a role in diagnosis gastroparesis to ruled out gastric obstructions, and also can be the treatment. Gastric emptying scintigraphy is considered the gold standard for diagnosis and quantification of delayed gastric emptying for gastroparesis. The goal of treatment is to reduce symptoms, correct nutrition, and improve quality of life Treatment of gastroparesis includes prokinetic medications, antiemetic medications, and it should also include education support diet and behaviour changes.*

Keywords: Diabetic gastroparesis; Diabetes mellitus, Endoscopy

1. Introduction

Diabetes mellitus (DM) global prevalence is increasing from 424.9 million patients in 2017 to the estimated 628.9 million by 2045 due to lifestyle, urbanization and tendency of obesity. Diabetic gastroparesis is one of the most frequent complication of diabetes mellitus, but not well recorded.¹Gastroparesis may be the most common gastrointestinal (GI) complication of diabetes, occurring in approximately 5% of patients with type 1 diabetes and 1% of those with type 2 diabetes.²

Gastroparesis is characterized by a combination of upper GI symptoms in association with delayed gastric emptying (GE) in the absence of mechanical outlet obstruction from the stomach.³Symptoms commonly associated with gastroparesis include postprandial fullness, nausea, vomiting, anorexia and weight loss, with or without abdominal pain. Delayed gastric emptying may result in poor glycaemic control, poor nutrition and dehydration, resulting in frequent hospitalizations and poor quality of life.⁴

Ineffective contractions of the corpus and antrum of the stomach, coupled with abnormal relaxation of the fundus and pylorus, resulting in diminished gastric capacity, diminished mixing of food contents in the stomach, and delayed gastric emptying which caused symptoms of diabetic gastroparesis. This abnormal functioning can lead to altered absorption of medications and destabilization of glycaemic control due to mismatched postprandial glucose and insulin peaks.⁵

The association between gastrointestinal symptoms and psychological factors, particularly anxiety and depression, is recognized in patients with functional diseases, such as functional dyspepsia and irritable bowel syndrome. There is evidence of increased prevalence of anxiety and depression in diabetic patients, but the relationship between these disorders and the presence of gastrointestinal symptoms haven't been investigated in diabetes.⁶

Upper digestive endoscopy has been used to observe the presence of mucosal lesions that could explain the oesophageal and dyspeptic complaints in diabetic patients. Therefore, this case report was to evaluate endoscopic findings in patient diabetes with gastrointestinal symptoms.

2. Case Report

A 52-year-old woman with a 7-year history of well-controlled type 2 diabetes mellitus was admitted with severe vomiting. She was vomiting more than 10 times per day in 2 days. The vomitus was non-projectile, would usually take the colour of the food eaten and was never bilious. She also complaint epigastric pain. There was no history of dysphagia, fever or headache. The colour of stools was normal. She had been prescribed with 10iu prandial insulin three times/day and basal insulin 20iu at night. She has history of hypertension. On examination, she was alert but looks tired due to severe vomiting. Her blood pressure (BP) was 160/80 mmHg, temperature 36°C, pulse 82/minute, respiratory rate 20/minute. Her conjunctivae were pink, there were no oral lesions and he had no lymphadenopathy. Chest examination was normal. In Abdominal examination epigastric pain was found. Her random blood glucose concentration was 191mg/dl. Blood potassium and sodium were 4.3 mmol/L (3.5 – 5.1) and 117 mmol/L (136 – 145) respectively. He had a slightly highblood creatinine (1.6 mg/dl) and others laboratory test are normal. Gastroesophago-duodenoscopy examination shows gastric oedema (figure 1.) The patient treated with Sodium Chloride 3% infusion, injection of proton pump inhibitors, antiemetic, angiotensin receptor inhibitor for hypertension drugs and insulin. Patient discharge after 4 days hospitalization.



Figure 1: Endoscopic findings shows gastric oedema

3. Discussion

Gastroparesis a syndrome characterized by upper GI symptoms and delayed gastric emptying that not associated with gastric outlet obstruction. This GI symptoms may originate not only from the stomach but also from the small intestine.⁷ Most patients with signs or symptoms of gastroduodenal obstruction or dysmotility will require structural evaluation with EGD and/or radiographic studies. If complete intestinal obstruction or perforation is suspected, initial evaluation with radiographic studies should be performed before endoscopy. Abdominal computed tomography (CT) is the preferred radiologic test for suspected intestinal obstruction. Because oral barium contrast may interfere with subsequent endoscopy, its use should be minimized or avoided if endoscopy is anticipated.

Endoscopic examination after gastric decompression can usually identify the nature and the precise level of obstruction, but the degree of the stenosis often does not correlate with symptoms. Endoscopy also offers the capability of tissue sampling and endoscopic therapy, where indicated. When structural abnormalities have been excluded, Gastrointestinal motility can be evaluated by using scintigraphy, radiographic contrast techniques, breath testing, or gastroduodenal manometry. Gastroduodenal manometry can be performed to differentiate intestinal myopathy from enteric or extrinsic neuropathy, but the availability of this test is limited and may not influence therapy.⁸

Esophagogastroduodenoscopy rules out organic diseases and may detect the presence of food in the stomach, suggesting ineffective antral motility. However, finding retained food in the stomach should not be considered as an automatic diagnosis of gastroparesis, but simply suggesting a delayed gastric emptying because some of these patients may have normal gastric emptying when scintigraphy is performed. This finding seems to be related to a pattern of preserved postprandial antral motility with an abnormal inter-digestive antral motility, which delays gastric emptying between meals.⁹

In diabetes mellitus gastroparesis, intra-pyloric injection of botulinum toxin to the pylorus has resulted in unconvincing results in terms of clinical efficacy. However, with the

advent of endoscopic ultrasonography, it is suggested that injection of botulinum toxin with direct ultrasonographic visualization to the muscularis propria of the pyloric sphincter will lead to better clinical outcomes. Endoscopic transpyloric stent placement has also been proposed as a salvage therapy and as a bridge to more permanent therapies, such as gastric electric stimulation (GES).¹⁰

Glycaemic control plays a key role in diabetic gastroparesis as it influences gastric emptying. Diabetic gastroparesis has been confirmed its correlation with blood glucose levels, HbA1c and duration of diabetes. Delayed gastric emptying is diagnosed if more than 60% of the meal is retained at 2 hours or more than 10% of the meal is retained at 4 hours. Gastric emptying scintigraphy, however, can be expensive and exposes patients to radioactivity.¹¹

Management of gastroparesis should include assessment and correction of nutritional state, relief of symptoms, improvement of gastric emptying and, in diabetics, glycaemic control. The need for minimally invasive, effective, and durable treatment for refractory gastroparesis has led to research and innovation in endoscopic therapies. Initial endoscopic treatment for gastroparesis focused on bypassing the affected stomach with enteral feeding tube placement. As such, endoscopic therapies that specifically target the pylorus, including intra-pyloric botulinum toxin injection, transpyloric stent (TPS) placement, and gastric per oral endoscopic myotomy (G-POEM), have been more recently investigated as potential treatments for gastroparesis.¹²

4. Conclusion

Gastroparesis as a diabetic complication should be studied more because of its global prevalence is still high. Endoscopy plays a role in diagnosis of diabetic gastropathy to rule out gastric obstruction before performing scintigraphy as a gold standard for diagnosis of gastroparesis. The diagnosis of gastroparesis is based on the combination of symptoms of gastroparesis, absence of gastric outlet obstruction or ulceration, and delay in gastric emptying. Markedly uncontrolled (> 200 mg / dl) glucose levels may aggravate symptoms of gastroparesis and delay gastric emptying. Optimization of glycaemic control should be a target for therapy; this may improve symptoms and the delayed gastric emptying. Documented delay in gastric emptying is required for the diagnosis of gastroparesis. Scintigraphy gastric emptying of solids is the standard for the evaluation of gastric emptying and the diagnosis of gastroparesis.

Declarations

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