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A Study to Find Prevalence and Clinical Spectrum of Gastroparesis Amongst Diabetic Patients

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ABSTRACT
Diabetes Mellitus is a worldwide problem and associated with gastrointestinal dysfunction that requires treatment to reduce patient discomfort. Hence, the present study was conducted to find the prevalence and clinical spectrum of gastroparesis amongst diabetic patients. The present cross-sectional study was conducted in the department of Gastroenterology among 300 diabetic patients. Patients were asked to describe various clinical symptoms of the gastroparesis i.e., nausea, retching, vomiting, postprandial fullness/early satiety, stomach fullness, inability to finish a normal-sized meal, feeling excessively full after meals, loss of appetite, bloating and visibly larger stomach or belly after meals. Data so obtained was analysed and a p-value of less than or equal to 0.05 was considered statistically significant. The prevalence of gastroparesis-related symptoms were found in 69 patients enrolled in the present study and among these patients 24% cases had diabetic from more than 20 years which was statistically significant. The most common symptom observed was fullness of stomach after meals followed by bloating. The prevalence of clinical symptoms of gastroparesis was observed among 23% of type 2 diabetic patients. The reported symptoms were fullness of stomach and bloating as most prevalent discomfort followed by loss of appetite, excessive fullness of stomach, stomach or belly visibly larger, nausea and retching.

INTRODUCTION

Delayed gastric emptying in the absence of mechanical obstruction is referred to as gastroparesis[1]. Patient-rated symptom assessments are needed for evaluating the effectiveness of medical treatments and for monitoring outcomes in gastroparesis[2]. Symptoms in diabetic gastroparesis can range from mild to severe and incapacitating. Diagnosing the condition is not always straightforward because of the extensive symptomatic presentations and because, conversely, patients may be asymptomatic, especially in the initial phase of the disease. The clinical presentation of diabetic gastroparesis includes early satiety, anorexia, abdominal pain, bloating, nausea and vomiting[3].

It is identified in clinical practice through the recognition of the clinical symptoms and documentation of delayed gastric emptying. Management of gastroparesis should include assessment and correction of nutritional state, relief of symptoms, improvement of gastric emptying and, in diabetics, glycemic control. Patient nutritional state should be managed by oral dietary modifications[4]. Although tests of gastric motor function may aid diagnostic labeling, their contribution to determining the treatment approach is often limited[1]. Hence, the present study was conducted to find the prevalence and clinical spectrum of gastroparesis amongst diabetic patients.

MATERIALS AND METHODS

The present cross-sectional study was conducted in the deparment of Gastroenterology among 300 diabetic patients. Patients were randomly selected and were asked about gastrointestinal symptoms as per Gastroparesis Cardinal Symptoms Index (GCSI).

Inclusion criteria comprised of diabetic patients with age more than 18 years. Ethical approval was taken from the institutional ethical committee and an informed consent was obtained from each participant before start of the study. The various parameters regarding duration of disease and gastrointestinal symptoms were collected. Patients were asked to describe various clinical symptoms of the gastroparesis i.e., nausea, retching, vomiting, postprandial fullness/early satiety subscale examine stomach fullness, inability to finish a normal-sized meal, feeling excessively full after meals, loss of appetite, bloating and visibly larger stomach or belly after meals.

Data so obtained was analysed using Statistical Package for Social Science (SPSS) Version-16 data analysis software. Chi-square test was used for the analysis and a p-value of less than or equal to 0.05 was considered statistically significant.

RESULTS

Total number of study participants were 300 with 58% as male patients and 42% as female patients. 23% (69 out of 300) were diagnosed with gastroparesis (Table 1 and Fig. 1). Among these patients 24% cases had diabetic from more than 20 years which was statistically significant (Table 2). None of the cases with history of diabetes from less than last 5 years had any symptom of gastroparesis with 6% of cases with 5-10 years history of diabetes and 8% among patients with 11-20 years history of diabetes reported diabetes which was statically non significant.

69 (23%) of diabetic patients among total of 300 reported gastroparesis symptoms with fullness of stomach was reported by 21% of 69 patients, bloating by 20%, nausea in 11%, fullness of stomach among 21%, retching in 3%, loss of appetite in 17%, excessive fullness of stomach in 15%, stomach or belly visibly larger in 13% of cases (Table 3).

Table 1: Prevalence of gastroparesis in diabetic patients

Total no. of participants	300 (%)	p-value
Male	58	Non-significant
Female	42	
Patients with gastroparesis	23	
Male	14	Non-significant
Female	9%	

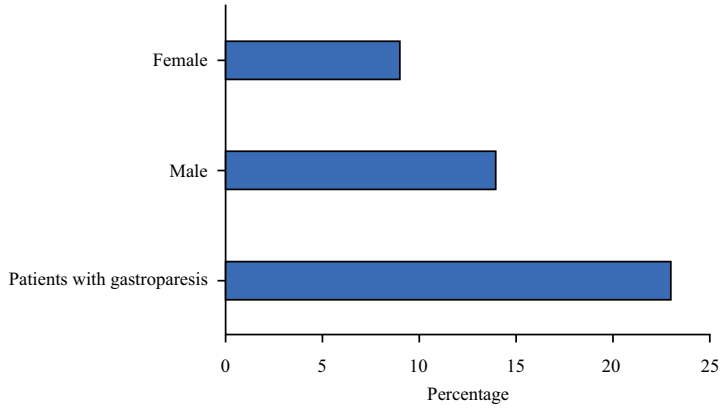

Fig. 1: Prevalence of gastroparesis

Table 2: Association of gastroparesis with duration of diabetes

Duration of diabetes	Gastroparesis present (%)	p-value
<5 years	0	Non-significant
5-10 years	6	Non-significant
11-20 years	8	Non-significant
>20 years	24	<0.05

Table 3: Clinical presentation of gastroparesis

Gastroparesis symptoms	(69/300) 23%
Nausea	11
Fullness of stomach	21
Retching	3
Loss of appetite	17
Excessive fullness of stomach	15
Stomach or belly visibly larger	13
Bloating	20

DISCUSSIONS

In the present study, the prevalence of gastroparesis-related symptoms were found in 23% patients enrolled in the present study and among these patients 24% cases had diabetic from more than 20 years which was statistically significant. The most common symptom observed was fullness of stomach after meals followed by bloating. Similarly, to our present study, Almogbel *et al*.[5] reported 10.8% prevalence of clinical symptoms of gastroparesis among type 2 diabetics. Clinical symptoms of gastroparesis were significantly correlated to HbA1c, blood glucose, duration of diabetes and comorbidities. The most common symptoms were bloating, stomach fullness and early satiety (63.94, 55.1 and 48.3% respectively). In logistic regression analysis, female gender emerged as significant independent predictors of the presence of at least one symptom.

In a study by Ye *et al*.[6] it was found that patients with diabetic gastroparesis had a significantly higher risk of mortality than those with idiopathic gastroparesis after diagnosis and of those with gastroparesis, 31.6% were not offered any recognised pharmacological therapy after diagnosis. Dhaifallah Alanazi *et al*.[7] reported 11.8% as the prevalence of gastroparesis symptoms among T2DM patients and multivariate logistic regression analysis revealed that females were at high significant risk for developing gastroparesis symptoms compared to males. Bukhari and Alsayarl[8] reported 7.9% prevalence of gastroparesis symptoms and these symptoms were significantly that 69% of participants with gastroparesis symptoms were using metformin (p<0.012). 10.3% of participants with gastroparesis symptoms were not using any diabetes medications (p<0.037).

The GCSI is based on three subscales: post-prandial fullness/early satiety (4 items), nausea/vomiting (3 items) and bloating (2 items)[2]. Symptoms that are often attributed to gastroparesis include postprandial fullness, nausea and vomiting[1]. The present study found that the most common symptom observed was fullness of stomach after meals followed by bloating. Among total of 300 reported gastroparesis symptoms with fullness of stomach was reported by 21% of 69 patients, bloating by 20%, nausea in 11%, fullness of stomach among 21%, retching in 3%, loss of appetite in 17%, excessive fullness of stomach in 15%, stomach or belly visibly larger in 13% of cases. In a comparable study by Asghar *et al*.[9] reported that gastroparesis-related common symptoms of early satiety, bloating and stomach fullness were considerably linked to the additional risk factors of hypercholesteremia, chronic microvascular complications, concomitant cardiovascular diseases and a positive family history of diabetes mellitus. There was no relationship between BMI, age, types of treatment and the degree of gastroparesis severity. The prevalence and severity of gastroparesis symptoms were particularly high among obese females with poor glycemic control and longer disease duration.

Diabetic gastroparesis (DGp) is a component of autonomic neuropathy resulting from long-standing poorly controlled type 1 and type 2 diabetes. The diagnostic workup of DGp first excludes obstruction and other causes including medications that may mimic delayed/disordered gastric emptying. Targeting nutrition, hydration, symptomatic relief and glycemic control are mainstays of treatment for DGp[10]. Gastroparesis do affect nutritional state and in diabetics it has deleterious effects on glycemic control and secondary effects on organs that increase mortality. First-line treatments include restoration of nutrition and medications (prokinetic and antiemetic). Second-line therapeutic approaches include surgery, venting gastrostomy or jejunostomy and gastric electrical stimulation, most of these were developed based on results from open-label trials. New therapeutic strategies for gastroparesis include drugs that target the underlying defects, prokinetic agents such as 5-hydroxytryptamine agonists that do not appear to have cardiac or vascular effects, ghrelin agonists, approaches to pace the stomach and stem cell therapies[11].

CONCLUSION

The prevalence of clinical symptoms of gastroparesis was observed among 23% of type 2 diabetic patients. The reported symptoms were fullness of stomach and bloating as most prevalent discomfort followed by loss of appetite, excessive fullness of stomach, stomach or belly visibly larger, nausea and retching.

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