A gluco-mindful approach to diabetic gastroparesis

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Abstract

Diabetes gastroparesis is a common manifestation of autonomic neuropathy in persons with long-standing, uncontrolled diabetes. Most discussion about its management revolves around the mitigation of symptoms. Here, we share tips on choosing the right glucose-lowering medication, based upon predominant symptomatology of gastroparesis. We highlight how insulin preparations, and their timing of administration, can be tailored according to need. We also emphasize the need to choose oral glucose lowering drugs with care.

Keywords: FI Asp, GLP1RA, modern sulfonylureas, person-centred care, SGLTi, tirzepatide, URLi.

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Introduction

Diabetic gastroparesis is a manifestation of autonomic neuropathy, which is often encountered in long-standing diabetes, along with other microvascular complications. The prevalence is higher in type 1 diabetes, and in women. The bidirectional link between gastroparesis and glycaemia is well known.[1] However symptoms of gastroparesis, viz, early satiety, nausea, bloating, abdominal pain and vomiting, once established, do not resolve with glycaemic control. Rather, the presence of these symptoms may confound or complicate efforts to manage glucose in a safe and secure manner.[2]

Much progress has been made in the study of gastroparesis, even though "the cupboard still seems bare".[3] The Gastroparesis Clinical Research Consortium works to understand the pathophysiology of the condition and develop effective treatments for it.[4] The American Gastroenterology Association[5] suggests that "clinicians should classify patients with gastroparesis into mild, moderate or severe, based on symptoms and the results of a properly performed gastric emptying study. AGA suggests symptom-based treatment while enjoining clinicians to be aware of multiple treatment options for nausea, vomiting and abdominal pain.

This approach should not be limited to choice of symptom-relieving medication. The same effort should be extended to choice of glucose lowering therapy as well. A wide spectrum of injectable and non-injectable drugs is now available, and the clinician should be cognizant of their pharmacokinetic properties and possible side effects. Persons with mild intermittent symptoms may benefit from avoidance or reduction in dose of drugs with gastrointestinal side effects, such as high dose metformin, alpha glucosidase inhibitors and glucagon-like peptide-1 receptor agonists (GLP1RA).

Persons with predominant bloating and early satiety, i.e., delayed gastric emptying, should be aware that ultra-rapid acting insulin analogues, with their fast onset of action, may cause post-prandial hypoglycaemia, and pre-prandial hyperglycaemia. Those with predominant vomiting, however, may benefit from these preparations. FI Asp (fast acting aspart) and URLi (ultra rapid acting lispro) can be injected up to 20 minutes after a meal, and this flexibility offers great confidence to a person who is unsure of his or her meal intake and absorption.[6] One can first consume a meal, and then decide the dose of bolus insulin, based on carbohydrate counting and gastrointestinal tolerance.

There are at least two scoring scales for gastroparesis, including the validated Gastroparesis Cardinal Symptom Index.[7] The American Motility Society Task Force on Gastroparesis scoring system[8] proposes symptom-based guidelines for treatment of diabetic gastroparesis, based upon the clinical severity. We suggest a modified 'gluco-mindful' system which is more relevant to diabetes care providers, as well as persons living with diabetes. This helps not only in assessing severity, but also in planning appropriate therapy.

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The American Motility Society Task Force on Gastroparesis scoring system[8]

Abell grade	Symptoms	Treatment	Impact on glucose control	Impact on glucose monitoring	Impact on non pharmacological therapy	Impact on oral glucose lowering therapy	Impact on injectable glucose lowering therapy	
							Predominant nausea, vomiting	Predominant bloating, early satiety
1	Mild intermittent symptoms	Dietary modification, avoidance of exacerbating agents	Good control; minimal glycemic variability	Consider CGM	Continue; add post-meal walk. Encourage small frequent meals	Avoid high dose metformin, alpha glucosidase inhibitors, oral GLP1RA. Prefer drugs which do not need rigid tab-meal gap	Avoid/withhold GLP1RA. Prefer ultra rapid acting insulin analogues which can be injected post-meal	Avoid GLP1RA Reconsider use of ultra-rapid acting insulin analogues.Regular human insulin may be used with shorter injection-meal gap.
2	Moderately severe symptoms but no weight loss	Prokinetic and antiemetic medications	Variable control; marked glycaemic variability	Strongly recommend CGM	Continue; add post-meal walk Encourage small frequent meals	Reduce dose of sulfonylureas, metformin; consider reducing imeglimin, SGLT2i if they are perceived to cause constipation	Withhold GLP1RA. Prefer ultra rapid acting insulin analogues which can be injected post-meal	Withhold GLP1RA. Avoid regular human insulin as it may cause hypoglycaemia.
3	Refractory to medication, unable to maintain oral nutrition, frequent emergency department visits	Intravenous fluids and medications, enteral or parenteral nutrition, endoscopy or surgery	Challenging control; ketonuria/ketosis ±; marked glycaemic variability	As per ICU standard of care	Withhold till symptoms have resolved	Withhold all oral therapy till acute symptoms have resolved. Focus on stress management sleep hygiene	Intravenous insulin	Intravenous insulin

Key: CGM=continuous glucose monitoring; ICU=intensive care unit
GLP1RA= Glucagon-like peptide-1 receptor agonists; SGLT2i+= Sodium/glucose cotransporter-2 inhibitors

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