Annals of Clinical Diabetes and Endocrinology

Editorial
Published: 28 Jun, 2018

Gastrointestinal Complications of Diabetes

Tomislav Bulum*

Vuk Vrhovac Clinic for Diabetes, University of Zagreb, Croatia

Editorial

Diabetic complications represent the main cause of patient's morbidity and mortality. With most common microvascular complications of diabetes like retinopathy, neuropathy and nephropathy, it is assumed that up to 75% of patients with diabetes may experience symptoms of gastrointestinal complications, but gastrointestinal complications of diabetes are not commonly recognized in clinical practice. The pathogenesis of gastrointestinal complications is primarily related, with known risk factors like hyperglycemia and duration of diabetes, with autonomic dysfunction of gastrointestinal tract. The management of patients with gastrointestinal complications is complex and requires a multidisciplinary approach. Reduced esophageal musculature tone and spontaneous contractions are consequence of autonomic nerve sphincter damage by diabetic neuropathy in esophagus. Symptoms include regurgitation, heartburn, dysphagia, and odynophagia. It has been suggested that up to 63% of patients with diabetes have esophageal dysmotility and there is no difference between patients with type 1 and type 2 diabetes. The management of esophageal dysmotility and reflux include better glycemic control and medications such as prokinetic drugs. The most common gastrointestinal complications of diabetes in patients with long duration of diabetes is gastroparesis. It is caused by autonomic neuropathy, hyperglycemia, long duration of diabetes, obesity, and deficiency of apolipoprotein E. The incidence of gastroparesis is higher in women, patients with type 1 diabetes and obesity. Although the pathogenesis of diabetic gastroparesis is multifactorial, diabetic gastropathy is thought to be a manifestation of autonomic neuropathy. Functional defect of gastroparesis include hypomotility-delayed gastric emptying, spasm of pylorus, blunted antral contractions, increased sensitivity to distention resulting presenting like vomiting, nausea, postprandial fullness, early satiety, upper abdominal pain, distension, anorexia, and bloating. The diagnosis of gastroparesis is made by gastric emptying scintigrapy using 99mTc sulphur colloid, which is the gold standard test for diagnosing gastroparesis. The management of gastroparesis, besides better glucose control, include quantitative dietary changes with reducing the intake of foods high in fat, intake of insoluble dietary fiber and alcohol. Small-intestine and colorectal dysfunctions are also common in patients with diabetes resulting in increased secretion and delayed transit and presenting with symptoms of distension, abdominal pain, and bloating. Autonomic neuropathy, hyperglycemia, long duration of diabetes, insulin-growth factor 1 reduction, and impaired synthesis of neuronal nitric oxide are underlying conditions for affection of colon and anorectum resulting in increased secretion, delayed transit, reduced motility, reduced anal tone and sensation. Constipation is a common presentation of diabetic enteropathy affecting up to 60% of patients with long duration of diabetes, while up to 20% of patients suffer from diarrhea. Diarrhea is most common in patients with type 1 diabetes and in men. It is well known that pancreatitis occurs 2-4 times more commonly in patients with diabetes compared to nondiabetic populations. Risk of pancreatitis is higher in patients with diabetes because of autonomic neuropathy, hyperglycemia, and long duration of diabetes is associated with reduced pancreatic enzyme secretion. Finally, nonalcoholic fatty liver disease (NAFLD) is well known complications in patients with type 2 diabetes, associated with insulin resistance and characterized by accumulation of fat in the liver and refers to a spectrum of disorders ranging from simple hepatic steatosis to more severe manifestations, including nonalcoholic steatohepatitis, fibrosis, cirrhosis, and liver failure. In addition, the term "hepatogenous diabetes" is used to describe diabetes developing in patients with cirrhosis because up to 80% of subjects with cirrhosis have abnormal glucose metabolism. Autoimmune diseases, including type 1 diabetes, have alarming increases worldwide in the past several decades. Autoimmune disorders associated with type 1 diabetes include also some gastrointestinal disorders like Celiac disease and Crohn's disease. In those autoimmune diseases environmental factors like infections and gut dysbiosis play important role in development of disease. In addition, some genetic component in the genesis of upper gastrointestinal tract disorders have been established like functional dyspepsia, hypertrophic pyloric stenosis and esophageal achalasia. Recently, for the first time, a gene linking type 1 diabetes and Crohn's disease have been found.

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Correspondence:
Tomislav Bulum, Vuk Vrhovac Clinic for Diabetes, University of Zagreb, Croatia, E-mail: tbulum@idb.hr

Received Date: *16 Jun 2018*
Accepted Date: *21 Jun 2018*
Published Date: *28 Jun 2018*

Citation:
Bulum T. Gastrointestinal Complications of Diabetes. Ann Clin Diabetes Endocrinol. 2018; 1(1): 1001.

Conclusion

In conclusion, it is assumed that up to 75% of patients with diabetes may experience symptoms of gastrointestinal complications. The pathogenesis of gastrointestinal complications is complex, primarily related to autonomic dysfunction of gastrointestinal tract, hyperglycemia and duration of diabetes.

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