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Letter to Editor

COVID-19: Bringing Diabetes and Mental Health Together at the Emergency Room

Andrew Jamieson[1,2]*

[1]*Consultant Endocrinologist, King Edward VII Memorial Hospital, Hamilton, Bermuda*

[2]*Honorary Senior Lecturer in Medicine, University of Glasgow Medical School, University of Glasgow, Glasgow, United Kingdom*

***Corresponding Author:** Andrew Jamieson, Consultant Endocrinologist, King Edward VII Memorial Hospital, Hamilton, Bermuda.

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During the "lockdown" period associated with the COVID-19 pandemic, a number of patients with decompensated diabetes presented to our institution. Among these were four patients with identical unusual clinical presentations.

A 35-year-old male with type 1 diabetes mellitus since age 26 attended the emergency room with a 5-day history of malaise, vomiting and anorexia. On admission, he was retching, dehydrated and smelled strongly of ketones. Pre-admission treatment consisted of once daily insulin glargine and pre-meal insulin as part using fixed doses rather than meal adjusted doses. Other regular medication included amlodipine 5mg once daily for hypertension. Physical examination revealed hypotension, mild epigastric tenderness and no evidence of microvascular complications.

Laboratory investigations are listed in the table. The patient had a negative nasopharyngeal PCR test for SarsCov19. The patient received treatment for diabetic ketoacidosis using a standardised institutional protocol with rapid resolution of the metabolic abnormalities. However, the patient continued to retch and vomit with persistent intermittent abdominal pain. Further observation and history determined that he had experienced regular bouts of abdominal pain and retching for several months prior to admission as well as generalised sweating.

A number of further investigations were performed including abdominopelvic CT scanning, gastroduodenoscopy and nuclear gastric emptying studies all of which were normal. He finally divulged that he had started using cannabis with increasing frequency during the lockdown period as a way to relieve boredom and anxiety. Prior to this, he had rarely used cannabis and his glycaemic control had been significantly better - HbA1c between 6.8 - 7.9% (51 - 63 mmol/mol) for the prior two years. The patient was counselled on the role of cannabis in causing habitual vomiting and the role that this may play in precipitating diabetic ketoacidosis. He discontinued cannabis with mild symptoms of withdrawal and resolution of the abdominal discomfort and vomiting. After 6 months follow up glycaemic control has improved as evidence by both improved HbA1c at 7.1% (54 mmol/mol) and a time in range of blood glucose of 71% using flash glucose measurement using a Freestyle Libre.

Over the next 4 months a further 3 patients presented to the emergency department with identical presentations with diabetic ketoacidosis with no evidence of COVID-19 or other precipitating features. Two of these had type 1 diabetes mellitus and one had a long history of poorly controlled type 2 diabetes (Table). All had a history of increasing cannabis use and attendant development of features of the cannabis hyperemesis syndrome.

Patient 1	Result (normal range)	Patient 2	Patient 3	Patient 4
Na	136 (134 - 145 mmol/l)			
K	5.2 (3.7 - 5.2 mmol/l)			
Urea Nitrogen	47 (10 - 27 mg/dL)			
Creatinine	1.4 (0.7 - 1.3 mg/dL)			
Glucose	856 (78 - 99 mg/dL)			
pCO_2	17 (38 - 50 mmHg)			
pH	7.101 (7.35 - 7.45)			
Bicarbonate	< 5 (23 - 34 mmol/l)			
Lipase, c-reactive protein, liver profile	Normal			
HbA1c	9.9%, 85 (4.4 - 5.9%; 25 - 41 mmol/mol)	8.1%, 65	11.1%, 98	> 14%, > 120
Anti-GAD 65	Positive (negative)	Positive	Positive	Negative
C-peptide	0.01 (0.80 - 3.85 ng/ml)	0.10	0.04	0.09 (previously 2.73 in 2018)

Table: *Laboratory data for the index patient and limited laboratory data for the additional 3 patients.*

All patients were treated with short term intravenous established on regular multiple daily dose regimens of long and short acting insulin with advice to abstain from cannabis use. At follow up of 2 - 5 months there was evidence of symptom improvement, improvement in HbA1c in all 3 patients and time in range of blood glucose of 49 - 66% using flash glucose measurement device in two of the patients.

Cannabis Hyperemesis Syndrome is a well described syndrome related to habitual regular use of cannabis. These case describe the potential destabilising effect of new or increasing cannabis use in patients with insulin deficiency in a time period where both mental health disorders and access to medical services was limited by a public health crisis. These cases highlight the need for vigilance in understanding the reasons why patients develop ketoacidosis and the less obvious precipitating factors.

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