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CASE REPORT / OLGU SUNUMU

Addison's Crisis or Momordica Charantia Extract: Which Caused Shock?

Şokun Sebebi Addison Krizi mi Yoksa Kudret Narı (Momordica charantia) mı?

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ABSTRACT

Aim: Addison's crisis is extremely rare entity that is difficult to diagnose in the emergency department. Here we present a case of Addison's crisis diagnosed in the emergency department who complained of vomiting after consuming extract of Momordica charantia fruit for gastric pain.

Case: A 29-year-old female was admitted to the emergency department with complaints of nausea and vomiting after consuming Momordica charantia extract for stomach pain. The patient had tachypnea, tachycardia, hypoglycemia, and hypotension. Blood tests revealed elevated anion gap (24 mEq/L) metabolic acidosis, +4 acetone, normokalemia, and hyponatremia. Although it was impossible to exclude intoxication immediately, 100 mg hydrocortisone was given IV due to possible Addison's crisis after obtaining blood samples for hormone testing and excluding other causes of shock. The tests revealed very high ACTH (1.250 pg/mL) and low cortisol (1.23 ug/dL) levels, and the patient was diagnosed with primary adrenal insufficiency.

Conclusion: This case illustrates the importance of comprehensive examination and management of profound hypotension and hypoglycemia in the emergency department and of emergency physicians diagnosing and initiating appropriate treatment for Addison's crisis.

Keywords: Addison's crisis, momordica charantia, bitter melon, shock, metabolic acidosis

ÖZ

Amaç: Addison krizi acil serviste tanı konulması zor olan oldukça nadir rastlanan bir durumdur. Bu yazımızda acil servise mide ağrısı için kudret narı meyvesi (Momordica charantia) ekstresi yedikten sonra kusma şikâyeti ilen başvurup, addison krizi tanısı konulan olguyu sunmayı hedefledik.

Olgu: 29 yaşında kadın hasta mide ağrısı için kudret narı (Momordica charantia) meyvesi ekstresini yedikten sonra bulantı ve kusma şikayetiyle acil servise başvurdu. Hastanın başvuru anında takipne, taşikardi, hipoglisemi ve hipotansiyonu mevcuttu. Kan sonuçlarında anyon açıklığı artmış (24 mEq/L) metabolik asidoz, +4 aseton, normokalemi ve hiponatremi görüldü. Zehirlenmeyi hemen dışlamak mümkün olmadığı için olası Addison krizi nedeniyle hormon testi için kan örneği alındıktan sonra ve diğer şok nedenleri dışlanarak IV 100 mg hidrokortizon verildi. Daha sonra hastanın kan sonuçlarında çok yüksek ACTH düzeyi (1.250 pg/mL) ve düşük kortizol (1.23 ug/dL) düzeyi tespit edildi ve hastaya primer adrenal yetmezlik tanısı konuldu.

Sonuç: Bu vaka, acil serviste derin hipotansiyon ve hipogliseminin kapsamlı muayenesinin ve yönetiminin, Addison krizini teşhis eden ve uygun tedaviyi başlatan acil hekimlerinin önemini göstermektedir.

Anahtar Kelimeler: Addison krizi, momordica charantia, kudret narı, şok, metabolik asidoz

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Introduction

Primary adrenal failure is an extremely rare entity that is difficult to diagnose in the emergency department (ED), with an incidence of 50 cases per 1.000.000 in the USA and 5 to 200 cases per 1.000.000 in Europe (1, 2). In this case report, we discuss a patient who complained of vomiting after consuming extract of Momordica charantia fruit for gastric pain. The patient was pre-diagnosed with Addison's crisis, and the diagnosis was confirmed as primary adrenal insufficiency and successfully managed in the ED.

Case Presentation

A 29-year-old Caucasian female was admitted to the ED with complaints of nausea and vomiting. The patient reported consuming Momordica charantia fruit extract to relieve stomach pain and nausea, which had persisted for two weeks. The patient was hyperpneic, tachypneic (24 respirations per minute), and tachycardic (126 beats per minute), exhibited deep hypoglycemia (40 mg/dL) and hypotension (blood pressure undetectable) with a Glasgow Coma Scale score of 15, and had no fever or hypoxemia. The patient had a BMI of 16.9 and dark skin. The Rapid Ultrasound for Shock and Hypotension (RUSH) protocol was performed. Pericardial tamponade, pneumothorax, cardiac wall motion abnormalities, pulmonary embolism, and right ventricular failure were all excluded as possible causes of hypotension. The patient had no free fluid in the abdomen; however, the patient had a narrow, collapsed inferior caval vein, indicating dehydration, for which the patient was immediately given 50 gr dextrose and 2 liters saline IV infusions, which minimally restored blood glucose, blood pressure, and urinary output. The patient's blood tests revealed elevated anion gap (AG=24 mEq/L) metabolic acidosis with a normal lactate level and +4 acetone, normokalemia, and hyponatremia, all of which indicated starvation ketosis (Table 1).

Metabolic acidosis persisted despite fluid replacement. The patient denied taking any drugs or chemicals that may cause elevated anion gap metabolic acidosis and was negative for paracetamol or salicylate, which might have caused the metabolic acidosis. There were no signs of infection causing septic shock. We started sodium bicarbonate IV. The persistence of metabolic acidosis, hypotension, hypoglycemia, and hyponatremia (except normokalemia) suggested Addison's crisis. The patient was given IV 100 mg of hydrocortisone after blood samples were obtained to measure ACTH and cortisol levels. A hemodialysis catheter was inserted to start hemofiltration in case of poisoning, and the patient was transferred to the intensive care unit. Blood biochemistry revealed very high ACTH (1.250 pg/mL) and low cortisol (1.23 ug/dL) levels, and the patient was diagnosed with primary adrenal insufficiency. The metabolic acidosis was meliorated, and the patient was transferred to the endocrinology ward. The patient was evaluated for etiologic and co-existing diseases and was discharged on the 12th day of admission with oral replacement therapy. Written consent was obtained from the patient.

Parameters	Levels
pH	7.25
PCO2 (mmHg)	15.4
HCO3 (mmol/L)	6.5
Na (mmol/L)	125
K (mmol/L)	4.02
Mg (mg/dL)	0.96
Cl (mmol/L)	102
Lactate (mmol/L)	1.47
BUN (mg/dL)	12.33
Creatinine (mg/dL)	0.69
ACTH (pg/mL)	>1250
Cortisole (µg/dL)	1.23

Table 1. Laboratory results

Written informed consent was obtained from the patient for publication of this case report and any accompanying images.

Discussion

Adrenal crisis (also known as Addison's crisis [AC]) refers to acute adrenal insufficiency, which is most common in patients with primary adrenal insufficiency (2). It may also occur in those with secondary or tertiary adrenal insufficiency or in patients who are abruptly withdrawn from exogenous glucocorticoids. AC predominantly manifests with shock, but the patients often have nonspecific symptoms, such as nausea, vomiting, abdominal pain, fever, weakness, fatigue, confusion or coma (3). This life-threatening emergency requires immediate treatment. In emergency settings, AC may be encountered as a potential complication of blunt trauma (including motor vehicle accidents); as a result of sudden, bilateral adrenal necrosis caused by hemorrhage, embolism, or sepsis; or, rarely, as a result of adrenal vein thrombosis after a back injury. Both mineralocorticoid and glucocorticoid deficiency can contribute to the development of AC, and there is almost always an acute stressor or cause of adrenal insufficiency (3). The clinical presentation includes hypotension, hypoglycemia, hyponatremia, and hyperkalemia. Except hyperkalemia, which was absent in our patient, the patient's physical appearance and clinical findings were diagnostic.

The vomiting may have altered the patient's potassium levels.

Bitter melon (Momordica charantia L.) is a plant that is consumed to support medical treatment. It includes bioactive chemicals, vitamins, minerals, and antioxidants. In most cultures, it is used as an herbal medicine to treat many conditions, and in Turkey, it is used for gastro-intestinal complaints. It may cause hypoglycemia due to an insulin-secretagogue-like effect, stimulation of skeletal muscle and peripheral cell glucose utilization, inhibition of intestinal glucose uptake, inhibition of adipocyte differentiation, suppression of key gluconeogenic enzymes, stimulation of key enzymes, HMP pathway, and preservation of pancreatic islet cells and their functions (4). Our patient reported using the extract for gastric pain. The hypoglycemic effect is a known result of this plant, but the patient's other symptoms are not known to be associated with it.

The emergency treatment includes immediate administration of 100 mg of parenteral hydrocortisone via an IV or intramuscular (IM) bolus injection. This bolus should be followed by hydrocortisone 200 mg/24h or 50 mg IV/IM every six hours (5). Our patient had received hydrocortisone concomitant to supportive care, and improvement of the patient's clinical state and laboratory parameters were achieved at the 48th hour of treatment.

Conclusion

This case illustrates the importance of the comprehensive examination and management of hypotension and hypoglycemia in the ED and of emergency physicians diagnosing and initiating appropriate treatment for Addison's crisis. If the patient presents with nausea and vomiting with a history of anorexia and weight loss, acute abdominal pain, hypoglycemia, dehydration and shock, unexplained fever, hyperpigmentation, or electrolyte imbalances such as hyponatremia, hyperkalemia, hypercalcemia, or azotemia, physicians should suspect Addison's crisis and start treatment.

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Informed Consent Statement: Written informed consent was obtained from the patient for publication of this case report and any accompanying images. A copy of the written consent is available for review in this journal.

References

1. Giwa A. Primary Adrenal Failure in the Emergency Department. *Am J Emerg Med*. 2018;36(2):340.e3-340.e5. doi:10.1016/J.AJEM.2017.10.043
2. Betterle C, Presotto F, Furmaniak J. Epidemiology, pathogenesis, and diagnosis of Addison's disease in adults. *Journal of Endocrinological Investigation 2019 42:12*. 2019;42(12):1407-1433. doi:10.1007/S40618-019-01079-6
3. Rathbun KM, Nguyen M, Singhal M. Addisonian Crisis. *Emerg Med (N Y)*. 2022;4(3):151-152. doi:10.1111/j.1442-2026.1992.tb00075.x
4. Joseph B, Jini D. Antidiabetic effects of Momordica charantia (bitter melon) and its medicinal potency. *Asian Pac J Trop Dis*. 2013;3(2):93-102. doi:10.1016/S2222-1808(13)60052-3
5. Dineen R, Thompson CJ, Sherlock M. Adrenal crisis: prevention and management in adult patients. *Ther Adv Endocrinol Metab*. 2019;10. doi:10.1177/2042018819848218/ASSET/IMAGES/LARGE/10.1177_2042018819848218-FIG1.JPEG