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A CLINICAL STUDY ON METHANOL POISONING AS A PROVOKE FOR THE DEMONSTRATION OF METABOLIC SYNDROME

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ABSTRACT

Methanol poisoning is often caused by young people (Teenagers) consuming homemade alcohol. The most common endocrine condition in young people, on the other hand, is diabetes, and DKA is a common cause of hospital admissions in this age group. Several factors have been identified as predisposing factors in the development of DKA, including opioid overdose and toxic exposure. The clinical and laboratory symptoms of a patient with DKA after methanol poisoning were examined in this study. 1 day after consuming home-made alcohol at a party, a 15-year-old male patient was admitted to MTC with nausea, vomiting, and abdominal pain. On the same day, he complained of blurred vision in the afternoon. His father had insulin-dependent diabetes, and his mother had iron deficiency anaemia, which she treated with ferrous sulphate. The patient had an attack of generalised tonic-clonic seizures before being sent to the hospital. The patient presented with localised painful stimulations, groans and non-reactive to light, as well as mydriatic pupils. He had an acetone taste on his breath as well. The systolic/diastolic blood pressure was 100/80 mmHg, the axillary temperature was 37°C, the respiratory rate was 30 minutes per minute, and the pulse rate was 130 minutes per minute. Physicians must be aware of the similarities in symptoms and signs between DKA and methanol poisoning, and adequate diagnostic tests must be conducted in suspicious cases. Since there are several interactions between the treatment strategies for these common conditions, careful monitoring is advised.

Keywords :- Methanol Poisoning, Diabetes Mellitus, Therapeutic management.

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INTRODUCTION

Methanol poisoning is often caused by young people (Teenagers) consuming homemade alcohol [1-5]. The most common endocrine condition in young people, on the other hand, is diabetes, and DKA is a common cause of hospital admissions in this age group. Several factors have been identified as predisposing factors in the development of DKA, including opioid overdose and toxic exposure [6-10]. The clinical and laboratory symptoms of a patient with DKA after methanol poisoning were examined in this study [11, 12].

Case presentation:

1 day after consuming home-made alcohol at a party, a 15year-old male patient was admitted to MTC with nausea, vomiting, and abdominal pain. On the same day, he complained of blurred vision in the afternoon. His father had insulin-dependent diabetes, and his mother had iron deficiency anaemia, which she treated with ferrous sulphate. The patient had an attack of generalized tonicclonic seizures before being sent to the hospital. The patient presented with localized painful stimulations, groans and non-reactive to light, as well as mydriatic pupils. He had an acetone taste on his breath as well. The systolic/diastolic blood pressure was 100/80 mmHg, the axillary temperature was 37°C, the respiratory rate was 30 minutes per minute, and the pulse rate was 130 minutes per minute. Electrocardiography revealed sinus tachycardia, as well as gasometry results of PO2:90 mmHg, O2 Sat:90%, pH:3.0, PCO2:15 mmHg, and bicarbonate:20 mEq/L. The results of the urine analysis revealed blood: +++, ketone: +++, and glucose:+++. Other laboratory tests are mentioned in Table 1.

Table 1 Biochemical tests of the patient with DKA			
and methanol poisoning			
Parameter	Value		
Na	135 meq/L		
K	5.4meq/L		
Ca	9.6 mg/dL		
pH	3.0 md/dL		
Serum methanol	75 mg/dL		
concentration			
Serum iron	150 mcg/L		
Serum amylase	450 mg/dL		
Blood sugar	350 mg/dL		
BUN	50 mg/dL		
Cr	1.6 mg/dL		
СРК	2000 U/L		

In addition to the standard DKA treatment, he received the required methanol poisoning treatment, which included folic acid bicarbonate sodium, and ethanol based on the toxic serum level of methanol; he also received 4 hours of hemodialysis. Following hemodialysis, the following findings were reported: Methanol in the blood: 75 mg/dL, Ethanol in the blood: 100 mg/dL pH:6.9, PCO2:21mmHg, and bicarbonate:8mEq/L. Gasometry: PO2:92 mmHg, O2 Sat:92%. pH:6.9. PCO2:22mmHg, and bicarbonate:8mEq/L. Because of the high serum level of methanol, the patient needed hemodialysis twice and remained in metabolic acidosis; sadly, he died during the second hemodialysis due to ventricular tachyarrhythmia. The next day, the deceased person was autopsied, and toxicology testing revealed that there was no measurable amount of ethanol or methanol, but that the serum level of isopropyl alcohol was 10 mg/dL.

DISCUSSION

Methanol poisoning is relatively common in India due to the ingestion of home-made alcohol, and if treatment is delayed, a high mortality rate is expected; the mortality rate of DKA with treatment is (1-3 percent). A patient with diabetes who had previously undergone repeated attacks of DKA was confirmed to have developed a refractory DKA as a result of methanol poisoning but there is no report of diabetes presenting for the first time as a result of methanol poisoning. In this poisoning, a high osmolar gap is expected; however, the increased metabolism of fatty acids and ketoacids (acetoacetate and beta-hydroxybutyrate) leads to diabetic ketoacidosis. Because of the discontinuation of insulin or physical stress such as pancreatitis, gastroenteritis, and myocardial infarction. A temporary increased need for insulin exists in these situations, this circumstance is more common in type 1 diabetes. Medical symptoms (such as nausea and vomiting, stomach pain, reduced visual acuity, dyspnea, tachycardia, and tachypnea) are very similar in these situations; paraclinical manifestations such as hyperglycemia, metabolic acidosis, and hyperamylasemia are also very similar. In both cases, hypotension and tachycardia were clarified as a result of dehydration in DKA and metabolic acidosis. Potassium levels that are abnormally high may be the product of progressive metabolic acidosis or acute renal failure, while total body potassium levels can decrease. The increase in BUN and Cr in the serum was consistent with dehvdration in DKA and could also be considered a complication of methanol poisoning. Since measured sodium in serum decreases in hyperglycemia, hyponatremia may be related to elevated blood sugar. Serum sodium levels that are normal could indicate extreme dehydration. It's worth noting that a detectable amount of isopropyl alcohol in a blood sample taken from the femoral vein is the result of reverse production of this blood ketone compound; this interaction will last for many hours after death; similarly, isopropyl alcohol intoxication does not trigger metabolic acidosis and this compound is eliminated well.

Conclusion:

Physicians must be aware of the similarities in symptoms and signs between DKA and methanol poisoning, and adequate diagnostic tests must be conducted in suspicious cases. Since there are several interactions between the treatment strategies for these common conditions, careful monitoring is advised.

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