P-0764 Diabetic ketoacidosis - characteristics and precipitating factors in type 2 diabetic patients admitted in ICU

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Background

Worldwide annu-al incidence of ketoacidosis (DKA) ranges from 4.6 to 8 cases per 1,000 pa-tients with diabetes, with a mortality rate of up to 10%. Most cases of DKA are triggered by infection followed by cessation of insulin treatment. Affecting mainly Type 1 diabetes patients, the precipitating factors for DKA and its clinical pathophysiology in Type 2 diabetes (T2D) are less clear. Little is known about DKA in T2D in Romania.

Aim

Our study aims to assess the prevalence, precipitating factors and clinical characteristics of T2D patients with DKA who were admitted to the intensive care unit of the National Institute of Diabetes in Romania.

Methods

This was a retrospective study that included adult T2D patients admitted for DKA between January 2013 and October 2016. Patients diagnosed with hyperosmolar hyperglycemic state (HHS) were not included. The initial laboratory evaluation included measurement of blood glucose, serum creatinine, ketone bodies, and electrolytes (with the anion gap), osmolality, urinalysis, as well as initial arterial blood gases and blood count.

Results

We analized 106 patients (58.49% women) with T2D, mean age 64,6±12 years. At admission, 39.6% patients were treated with an insulin regimen, while 60.4% used a non-insulin treatment before admission or had no treatment.

Infection was the main precipitating factor of DKA (40.6%) followed by new onset of T2D (24.5%), antidiabetic treatment cessation (21.7%) and other causes (22.65%) including cardiovascular events, major surgery, pancreatitis, and trauma. Among patients who have stopped their medication, 18.8% were treated with insulin. Kussmaul breathing was present in 56.6 % of the patients. Initial mean blood glucose was 615±270 mg/dL, mean osmolality was 306,3±23,7 mOsm/L, mean pH was 7,164±0,14 and mean HCO³⁻ was 10±4,3mmol/L. Ketonuria was present in 70.1% of the patients. Potassium had a mean value 4,5±0,9 mmol/L, 13.59% patients had hypokalemia and 26.21% had hyperkalemia at hospital presentation. Overall, majority of cases (54.72%) were with moderate DKA based on international criteria. Severe DKA was identified in 15.09%.

Discussion

In clinical practice, the patients at risk might benefit from earlier introduction and intensification of insulin therapy to avoid DKA and other complications of T2D. The high percentage of severe DKA at presentation observed in our analysis is associated mainly with infectious complications of T2D patients. Although we collected limited information regarding diabetes medication, our results show that treatment adherence, especially at insulin regimens, need particular consideration in diabetic patients. It is important to know the particularities of these patients and the most common causes of hospital admission for DKA in T2D patients for a rapid and successful clinical management.

Factor	Type 2 diabetes
N	106
Age	64,6±12 yr
New onset/ Previous diabetes	26/106 (24,5%)
Self cessation of therapy	23/106 from which 20 cases treated with IT
Infection	41/106
Kussmaul breathing	60 (56,6%)
Mean serum glucose	615±270 mg/dl
Ketonuria	73 (70.1%)
Mean pH	7,164±0,14
Mean pCo2	24,7±7,2
Mean HCO3 ⁻	10±4,3 mmol/l
Mean Sodium	132,5±9,2
Mean Potassium	4,5±0,9
Serum osmolality	306,3±23,7

1.Altintas Dogan A.D, Jørgensen U.L,Gjessing H.J,Diabetic Ketoacidosis Among Patients Treated With Continuous Subcutaneous Insulin Infusion.*Journal of Diabetes Science and Technology*,2016, 10.1177/1932296816668375

2.Ebenezer A. Nyenwe, Abbas E. KitabchiThe evolution of diabetic ketoacidosis: An update of its etiology, pathogenesis and management. *Metabolism Clinical and Experimental*, 65 (2016) 507 – 521