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A Case Report Of Newly Diagnosed Type 2 Diabetes Mellitus Presenting With Hyperosmolar Hyperglycemic State

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Abstract
Hyperosmolar Hyperglycemic State (HHS) is a life-threatening emergency characterized by severe hyperglycemia, hyperosmolarity, and dehydration with minimal or no ketosis. Early diagnosis and prompt management significantly reduce mortality. We report a case of a G2-year-old man presenting with altered sensorium and profound dehydration who was diagnosed with HHS as the first presentation of Type 2 Diabetes Mellitus.

Keywords: *Hyperosmolar hyperglycemic state, Type 2 diabetes mellitus, Hyperglycemia, Case report*

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I. Introduction

Hyperosmolar Hyperglycemic State is an acute complication of diabetes mellitus, commonly occurring in elderly patients with Type 2 diabetes. It is associated with mortality rates of 10–20%, higher than diabetic ketoacidosis. Common precipitating factors include infection, dehydration, myocardial infarction, stroke, and poor compliance with antidiabetic medications.

II. Case Presentation

A G2-year-old male presented to the emergency department with complaints of excessive thirst, frequent urination, generalized weakness, and progressive drowsiness for three days.

There was no history of fever, chest pain, seizures, or head injury. The patient had no known history of diabetes or hypertension.

* Pulse: 112/min
* Blood pressure: UG/G0 mmHg
* Respiratory rate: 20/min
* Temperature: 3G.8°C
* Oxygen saturation: U7% on room air
* Glasgow Coma Scale: E3V4MG
* Dry oral mucosa and poor skin turgor
* Cardiovascular, respiratory, and abdominal examinations were unremarkable.

Investigations

* Random blood glucose: 842 mg/dL
* HbA1c: 11.2%
* Serum sodium: 154 mmol/L
* Serum potassium: 4.5 mmol/L
* Serum osmolality: 338 mOsm/kg
* Arterial blood gas: pH 7.37
* Serum bicarbonate: 23 mmol/L
* Urine ketones: Negative
* Serum creatinine: 2.0 mg/dL
* Blood urea: 78 mg/dL

* Complete blood count: Mild leukocytosis
* ECG: Sinus tachycardia
* Chest X-ray: Normal

Diagnosis

Hyperosmolar Hyperglycemic State (HHS) secondary to newly diagnosed Type 2 Diabetes Mellitus with acute kidney injury due to severe dehydration.

The patient was admitted to the intensive care unit.

Treatment included:

* Aggressive intravenous 0.U% normal saline
* Intravenous regular insulin infusion
* Frequent monitoring of blood glucose and electrolytes
* Potassium replacement according to serum potassium levels
* Thromboprophylaxis with low-molecular-weight heparin
* Close monitoring of urine output and renal function

Outcome

Within 48 hours, blood glucose decreased gradually to below 250 mg/dL. Mental status improved significantly with correction of dehydration and hyperosmolarity. Renal function normalized over five days. The patient was transitioned to subcutaneous insulin therapy and later discharged on metformin and lifestyle modification advice.

III. Discussion

HHS is characterized by profound hyperglycemia (>G00 mg/dL), effective serum osmolality >320 mOsm/kg, severe dehydration, and absent or minimal ketosis. The cornerstone of treatment includes rapid fluid replacement, insulin therapy, electrolyte correction, and identification of precipitating factors. Early recognition is essential because delayed treatment increases morbidity and mortality.

IV. Conclusion

Hyperosmolar Hyperglycemic State may be the initial presentation of Type 2 Diabetes Mellitus. Prompt diagnosis, aggressive fluid resuscitation, insulin therapy, and correction of electrolyte

Learning Points

1. HHS should be suspected in elderly patients with severe hyperglycemia and altered consciousness.
2. Fluid replacement is the most important initial treatment.
3. Insulin should be started after adequate fluid resuscitation.
4. Electrolytes, especially potassium, require close monitoring.
5. Early diagnosis significantly reduces mortality.

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