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Hyperosmolar hyperglycemic nonketotic syndrome in a Turkish family medicine clinic

Key words:

Diabetes,
complication,
hyperosmolarity,
hyperglycemia

Abstract

Introduction: Hyperosmolar Hyperglycemic Nonketotic Syndrome (HHNS) is a complication of Diabetes mellitus observed with high serum glucose, absence of ketone bodies and high hyperosmolarity. HHNS is a medical emergency requiring prompt recognition and treatment.

Case report: A 52 year old diabetic Turkish woman is admitted to our institution with +2 positive excretion of glucose in urine, high level of plasma glucose of 515 mg/dL and hiperosmolality (328 mOsm/kg). A careful treatment with intravenous fluids, potassium and use of insulin (0.1U/kg IV bolus and continuous IV infusion of 0.1U/kg). When her plasma glucose level decreased to normal levels, the patient was discharged with commitments for her effective diabetes therapy.

Introduction

Hyperosmolar Hyperglycemic Nonketotic Syndrome (HHNS) is a syndrome of abnormally high serum glucose and osmolality coupled with depressed consciousness and an absence of ketoacidosis.

HHNS is a complication of diabetes mellitus which is a serious condition most frequently seen in older persons and it is usually caused by an illness or infection. It represents as many as 20 percent of all cases of severe hyperglycemia and constitutes a life-threatening medical emergency¹.

It is related to diabetic ketoacidosis (or DKA) which is the another complication of the diabetes and they are differentiated from each other by the measurement of ketone bodies, organic molecules that are representative for DKA, while usually not detectable in HHNS. From 50% to 75% of hospitalized patients who have uncontrolled diabetes present with significant hyperosmolarity².

An altered state of consciousness attributable to uncontrolled diabetes is virtually always the result of severe hyperosmolar hyperglycemia.

HHNS is a medical emergency that requires prompt recognition and treatment. Delayed diagnosis and treatment is one of the important factors responsible for the high mortality associated with HHNS^{3,4}.

There is no symptom or sign specific of HHNS, and hence there is often a delay in seeking medical care. Patient typically have no prior knowledge of glucose intolerance, and experiences polyuria, polydipsia and weight loss, as osmotic diuresis sets in⁵.

Usually, these patients at presentation have poor skin turgor, dry mucous membrane, tachycardia, low jugular venous pressure and maybe hypotensive⁶.

HHNS should include immediate determination of blood glucose, blood urea and creatinine, serum electrolytes, osmolality and ketones and arterial blood gases.

The treatment of HHNS consists of correction of the dehydration with intravenous fluids and potassium and the judicious use of insulin (0.1U/kg IV bolus and after 0.1U/kg IV), in conjunction with careful monitoring of central venous pressure and urine output, and management of any underlying conditions that might have precipitated the illness, such as an acute infection form the mainstays of treatment.

Case report

A 52 year old Turkish woman was admitted to our institution with tiredness, lassitude, polyuria, dysuria symptoms. The patient didn't described any chronic illness or taking medicine. There was excretion of glucose in urine and in blood test the plasma glucose (greater than 515 mg/dL) and the serum osmolarity (greater than 328 mOsm/kg) was abnormal.

The patient has been hospitalized in Family Medicine Clinic with diagnosed with HHNS. In physical examination, genital infection was found and treated. The treatment of HHNS has done with intravenous fluids (4 litres), potassium and intravenous of insulin (0.1 U/kg, IV bolus and after regular 0.1 U/kg IV). After that her plasma glucose is decreased to normal levels, the patient is discharged with special commitments for her illness.

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Conclusion

HHNS is approximately 1% of hospitalized patients due to Type 2 diabetes (T2DM)⁶. Diagnosis of appropriate treatment should be started without delay. Life-threatening hyperglycemic hyperosmolar syndrome, which is characterized by severe hyperglycemia without ketoacidosis, and very high serum osmolarity and dehydration, appears to be risen in adolescents with extreme obesity and T2DM.

High index of suspicion in dehydrated patients who continue to have increased rather than decreased urine output may help in early diagnosis. The treatment guidelines recommend early restoration of the intravascular volume, correction of fluid and electrolyte deficits, hyperglycemia and hyperosmolarity.

Дијабетесно некетогено хиперосмоларно стање у Турској клиници опште медицине

Кључне речи:

Дијабетес,
компликације,
хиперосмоларност,
хипергликемија

Сажетак

Увод. Дијабетесно некетогено хиперосмоларно стање је компликација дијабетес мелитуса, чије су карактеристике висок ниво глукозе у серуму, непостојање кетонских тела и изражена хиперосмоларност. То је хитно медицинско стање које захтева што брже постављање дијагнозе и почетак терапије.

Приказ случаја. Туркиња, дијабетичарка стара 52 године, примљена је у нашу установу са +2 позитивним налазом глукозе у урину, високом концентрацијом глукозе у плазми од 515 mg/dL и хиперосмоларношћу (328 mOsm/kg). Проведена је терапија опрезном интравенском надокнадом течности и калијума и применом инсулина (0,1 U/kg у интравенском болусу, праћена континуираном интравенском инфузијом 0,1 U/kg). Када је ниво глукозе у плазми достигао нормалне вредности, пацијенткиња је отпуштена кући, са упутствима за ефикасну терапију дијабетеса.

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