

Recurrent hypothermia and hypoglycemia as the initial presentation of hepatitis C

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Abstract

Hepatitis C most commonly manifests with asymptomatic elevations in transaminase levels or in advanced stages, may present with hepatic encephalopathy or ascites. We report the first case in the literature, in which the initial manifestation of hepatitis C induced chronic liver disease was recurrent hypoglycemia and hypothermia. In our case, the hypoglycemia was induced by glycogen depletion from hepatitis C induced chronic liver disease. In chronic liver disease, glycogen stores are depleted from extensive fibrosis and it has been shown that glycogen depletion may herald hepatic encephalopathy, which later manifested in our patient.

Introduction

We report a case of a 50-year-old male with recurrent hypothermia and recurrent hypoglycemia as the initial presentation of hepatitis C, the first of its kind in the literature, and the basis of this correspondence.

Case Report

A 50-year-old African American male with a past medical history of type 2 diabetes mellitus, hypothyroidism, seizure disorder, and remote alcoholism presented with the acute onset of altered mental status and hypothermia in the Emergency Department. He had been hypoglycemic in the absence of insulin and all other medications associated with hypoglycemia. Laboratory evaluation revealed an unremarkable complete metabolic panel including liver function tests, complete blood count, ammonia level, amylase, lipase, urine drug screen, and blood alcohol level. A computed tomography (CT) scan of the head was unremarkable for an acute neurological event. It was presumed that the patient's disorientation was secondary to hypoglycemia and possible sepsis, given his hypothermia. Broad spectrum antibiotics were initiated. Further investigations including thyroid studies, AM cortisol, insulin, proinsulin, C-

peptide, insulin antibodies, adrenocorticotropic hormone, aldosterone, and HIV studies were all negative. However, the patient continued to experience hypoglycemia despite broad spectrum antibiotics, as well as a continuous 10% dextrose drip and he experienced recurrent hypothermia despite warming measures. An infectious etiology had been ruled out given negative microbial cultures and the absence of all other septic criteria besides hypothermia. An abdominal CT revealed a dilated common bile duct, a questionable hepatoma, and a dilated pancreatic duct. An endoscopic ultrasound (EUS) was performed to evaluate for malignancy induced hypoglycemia, such as a hepatoma that may secrete insulin growth factor. However, EUS revealed severe chronic pancreatitis. Hepatitis serologies were positive for the Hepatitis C antibody, which was validated by positive RNA. The patient was found to have a low glucagon level, which explained his hypoglycemia, contributing to hypothermia. His mental status improved with aggressive glucose and glucagon supplementation. Later in his hospital course, the patient developed sequelae of liver disease: at first hepatic encephalopathy, then ascites, followed by coagulopathy. Unfortunately, the patient succumbed to his complications.

Discussion

Hypothermia combined with hypoglycemia in the absence of alcohol or drug toxicities on initial presentation is treated as sepsis until proven otherwise.¹ However, hypothermia and hypoglycemia can coexist in other conditions such as severe malnutrition, neurological injury, alcoholism, hypothyroidism, and adrenal insufficiency. The mechanisms by which hypothermia can be induced is extremely variable and usually, there are multiple mechanisms that are in place which are responsible for hypothermia as seen in our case as well as Robinson and Abbott's report.^{1,2} Robinson and Abbot reported a case of valproic acid overdose causing unresponsiveness and severe hypothermia.² Any alterations in mental status can precipitate hypothermia via loss of heat preserving mechanisms.^{1,3} Valproic acid is also associated with GABA agonism, which has been proven to worsen hypothermia⁴ in the absence of ammonia elevations.⁵ Note that hypothermia is associated with alterations in mental status, which is another method of causing hypoglycemia.^{1,3} In our case, the patient continued to experience recurrent severe hypothermia and hypoglycemia, even when he was mentating at an appropriate level, which suggested another underlying mechanism. In our case, it was suggested that the patient's hypoglycemia was induced by glycogen depletion from hepatitis C induced chronic liver disease. Hypoglycemia itself, causes hypother-

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mia at the cellular level, as glucose is required for most metabolic pathways and without glucose, heat production is stunned.³ In chronic liver disease, glycogen stores are depleted from extensive fibrosis and it has been shown that glycogen depletion may herald hepatic encephalopathy,⁶ which later manifested in our patient. Hepatitis C most commonly manifests with asymptomatic elevations in transaminase levels or in advanced stages, may present with hepatic encephalopathy or ascites. In conclusion, we report the first case in the literature, in which the initial manifestation of hepatitis C induced chronic liver disease was recurrent hypoglycemia and hypothermia.

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