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Case Report

Elevated Carbohydrate Antigen 19-9 Levels in Acute Viral Hepatitis

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Abstract

Increased serum levels of carbohydrate antigen 19-9 (CA 19-9) are associated with pancreatic cancer and various other gastrointestinal malignancies. Elevated CA 19-9 levels have also been reported in various nonneoplastic liver diseases. We report a rare case of a 63-year-old male who presents with elevated CA 19-9 levels during an acute bout of hepatitis B, which normalized after spontaneous resolution of the infection.

Keywords: Acute Hepatitis B; CA 19-9; Pancreatic Obiliary Malignancies

Introduction

Carbohydrate antigen 19-9 (CA 19-9) is a tumor marker that is used to diagnose and prognosticate pancreatic obiliary malignancies. While elevated CA 19-9 levels are associated with malignancy, they can also indicate benign conditions, such as acute cholangitis, severe steatosis, autoimmune hepatitis, chronic alcoholic hepatitis, and hepatic cirrhosis [1,2]. Additionally, elevated CA 19-9 levels may be seen in chronic viral hepatitis, most often found in patients with chronic hepatitis C. Statistically significant correlations were observed between the serum CA 19-9 concentration and the following hepatic liver tests: aspartate aminotransferase, alkaline phosphatase and bilirubin [3].

In 1998, Collazos et al reported one case of elevated CA 19-9 levels in a patient with acute hepatitis B in Spain [4]. In 2020, on retrospective review of 6,899 South Korean cases of elevated CA 19-9 levels (≥80 U/mL), Kim et al reported 3 cases in which acute hepatitis B was identified as the likely source [5]. Presently, to the best of our knowledge, there have not been any cases of elevated CA 19-9 levels in the setting of acute hepatitis B in the United States. Here, we present the case of a patient with an elevated CA 19-9 level during an acute bout of hepatitis B, which normalized after spontaneous resolution of the infection.

Case Presentation

A 63-year-old male with a history of acid reflux, Barrett's esophagus, and irritable bowel syndrome presented to the clinic with mild fatigue. One month prior, the patient began to experience fatigue, weight loss and poor appetite. Three weeks after appearance of his symptoms, the patient noted the onset of jaundice, which gradually improved several days before presentation. The patient denied any abdominal pain and physical exam revealed bilateral sclera icterus and markedly jaundiced skin. At the time, laboratory data was significant for total bilirubin of 18.38 mg/dL, Aspartate Aminotransferase (AST) of 439 U/L, and Alanine Aminotransferase (ALT) of 728 U/L. Laboratory data was also significant for CA 19-9 levels of 104 U/mL. Blood tests were significant for hepatitis B surface antigen (HBsAg) and hepatitis core IgM (IgM anti-HBc), consistent with an acute bout of hepatitis B.

Computed Tomography (CT) of the abdomen and pelvis without contrast did not reveal any hepatic or biliary pathology. Abdominal and pelvic ultrasound showed no evidence of a gross calculus or biliary dilatation but revealed an irregularly shaped gallbladder that was under distended, limiting its evaluation.

The patient's acute hepatitis B resolved spontaneously, and his CA 19-9 level eventually normalized to 22 U/mL. Table 1 illustrates the clinical course of the infection with corresponding lab values and serological markers.

We have followed up with the patient for 14 years since the episode of acute hepatis B. To date, no malignancies have been detected.

Discussion/Conclusion

CA 19-9 is a glycoprotein found on the epithelia of pancreatic and biliary structures. It is primarily used as a tumor marker for the diagnosis of pancreatic obiliary malignancies. Clinicians should be cautious when interpreting the significance of a CA 19-9 elevation, as levels may be elevated in benign conditions as well.

To the best of our knowledge, our case is one of few, and the only one in the United States, that reports an elevated CA 19-9 serum level in conjunction with an acute hepatitis B infection. Cases of acute hepatitis B in the United States are less common since the advent of the hepatitis B vaccine, which became commercially available in 1982 [6].

While elevated CA 19-9 levels are frequently seen with pancreatic obiliary cancer, benign etiologies should not be overlooked. Additionally, uncertainty as to the interpretation of CA 19-9 can lead to unnecessary follow-ups. Therefore, it is important for clinicians to be educated in the various non neoplastic conditions that can lead to elevated CA 19-9. We report yet another cause of elevated CA 19-9 due to a non neoplastic condition, specifically acute hepatitis B.

The best way to confirm a non neoplastic cause of elevated CA 19-9 is to ascertain if changes in CA 19-9 levels correspond with the course of the disease. In our case, the acute hepatitis B infection spontaneously resolved, and CA 19-9 returned to baseline. In general, if CA 19-9 levels return to baseline after treatment or resolve spontaneously, additional follow-up would not be necessary.

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Table 1: Clinical course of acute hepatitis B with associated liver function tests, CA19-9 levels, and hepatitis serological markers.

	Reference range	Acute HBV infection		Window period		Recovery
		October 25	November 13	November 27	January 2	February 12
Total Bilirubin (mg/dL)	0.20 - 1.50	18.38*	8.33*			0.72
AST(U/L)	3 - 50	439*	464*	33		20
ALT (U/L)	3 - 60	728*	542*	42		16
CA19-9 (U/mL)	0 - 37	104*	130*	63*	28	22
HBsAg	N/A	+	+	–	–	–
IgM anti-HBc		+			+	+
anti-HBs			–	–	–	+
HBV DNA (copies/mL)		1,451,810	79,103		+	– (as of 04/16)

*Indicates abnormal value.

While the mechanism leading to increased CA 19-9 levels in acute and chronic hepatitis has yet to be confirmed, various theories have been proposed. One theory proposes that chronic hepatitis suppresses liver function, thereby reducing the hepatic metabolism of CA 19-9 [5,7]. Another theory proposes that obstructive jaundice blocks CA 19-9 excretion [5]. These theories would explain the observed trend of normalization of CA 19-9 levels following improvement in liver function tests. As our case followed a similar trend, we speculate that similar mechanisms were at play.

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