Case Report

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Acute on Chronic Hepatitis with Liver ^{18}F-FDG-Uptake Related to Sars-Cov-2 Infection

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ABSTRACT

A 44-year-old HBV-related cirrhotic patient required hospital care for febrile diarrhea and inflammatory syndrome. ^{18}FDG-PET-CT showed unusual FDG-uptake in the right liver with acute suppurative cholangitis on biopsy. Hepatic enzymes were increased to 3-4 fold except for gamma-glutamyl transferase to 14-fold. SARS-CoV-2 was found in stool and ascites. This case of COVID-19-associated liver injury may be related to direct liver infection with SARS-CoV-2. Entrance of the SARS-CoV-2 into the liver might be through the digestive tract via angiotensin converting enzyme type 2, highly expressed in cholangiocytes. Our patient recovered after a pure gastrointestinal and hepatobiliary manifestation of COVID-19 without pneumonia.

Keywords: Sars-CoV-2; 18FDG-PET-CT; Hepatic Uptake; Acute on Chronic Hepatitis; HBV-Induced Cirrhosis

Introduction

COVID-19 associated liver injury is defined as any liver damage occurring during disease progression in patients with or without pre-existing liver disease. Further studies are needed to understand more about the hepatic manifestations of COVID-19 in patients with preexisting liver diseases and those with poor liver reserve. The case report unusual liver FDG-uptake on ^{18}F-FDG-PET-CT in a HBV-cirrhotic patient with COVID-19 abdominal manifestations and liver injury.

Case Report

A 44-year-old male with HBV-related Child A cirrhosis required hospital care for febrile diarrhea, abdominal pain, increased inflammatory syndrome and ascites. At the admission, nasopharyngeal PCR was positive for SARS-CoV-2 with no radiological evidence for pneumonia. ^{18}FDG-PET-CT showed an unusual uptake of liver's right lobe with an SUV max of 4.8, moderate splenomegaly, diffuse moderate bone marrow uptake with absence

of 18FDG-uptake in ascites (Figures 1a-1c). In line with this, liver biopsy showed cirrhosis with acute suppurative cholangitis. Classic serial sections stained with hematein- eosine-saffron HES didn't show viral inclusion. No Hepatitis B Virus reactivation was found and other causes of hepatitis were excluded. Later, enhanced CT-scan showed later terminal ileocolitis. SARS-CoV-2 was found in stool and ascites fluid. C-reactive protein level was 250 mg/l, alanine aminotransferase as well as conjugated bilirubin level were increased 3-fold. Alkaline phosphatase activity was increased 4- fold and gamma-glutamyl transferase level was increased 14-fold. The patient received steroids and tocilizumab with intensive symptomatic treatment. He recovered and was discharged home one month after admission. A 10-month follow-up ^{18}FDG-PET-CT was normal (Figure 1d).

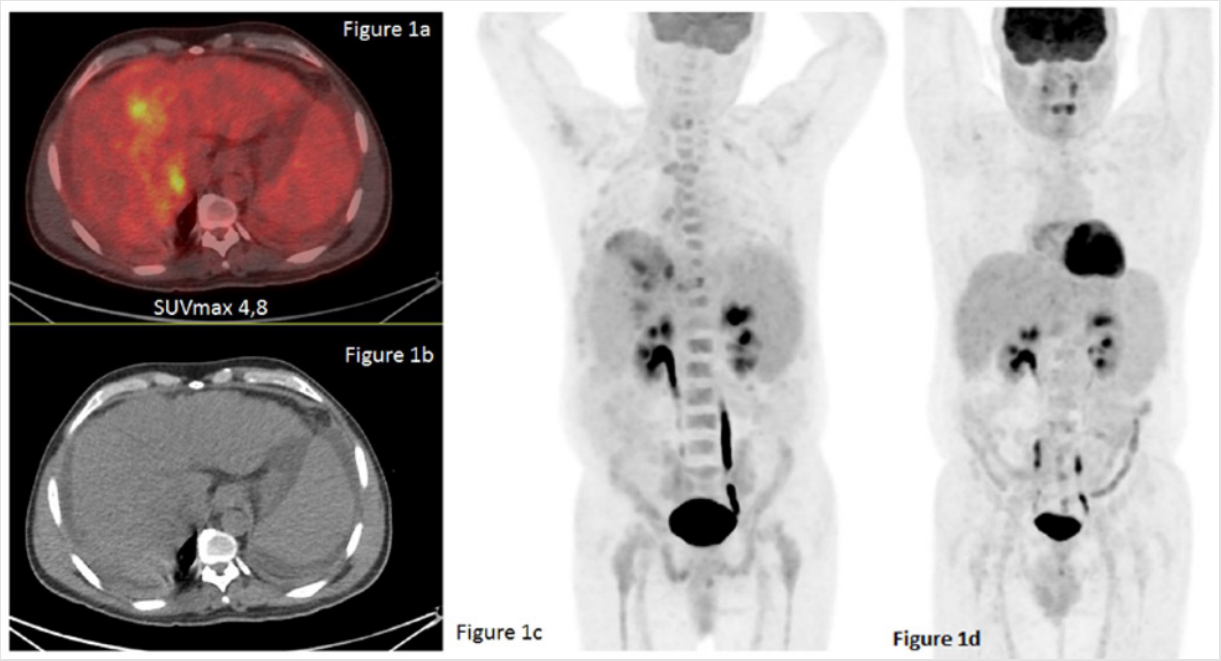

Figure 1:

1. Figure 1a,1b,1c: Transverse fusion image, CT scan, whole body ^{18}FDG-PET-CT showed an unusual uptake of liver's right lobe with an SUV max of 4.8, moderate splenomegaly, diffuse moderate bone marrow uptake with absence of ^{18}FDG-uptake in ascites.
2. Figure 1d: A 10-month follow-up was normal.

Discussion

We report a new case of COVID-19-associated liver injury [1]. The originality of this case relies on the unusual liver 18FDG-uptake, which may be related to liver infection with SARS-CoV-2. Actually, the absence of viral clues or specific liver damage on the liver biopsy does not exclude this diagnosis [2-4]; more pathological examinations are needed. Entrance of the SARS-CoV-2 into the liver might be through the digestive tract because the intestinal epithelial cells highly express angiotensin converting enzyme type 2, which is the receptor of SARS-CoV-2 [3]. The angiotensin converting enzyme type 2 is highly expressed in cholangiocytes as well and much less in hepatocytes. In a meta-analysis, fecal SARS-CoV-2 was found very commonly in infected patient [5]. Alternatively, a systemic viral circulation may infect the liver with viral secretion in the intestinal tract through cholangiocytes [6]. Digestive infection tended to be more frequent in patients with severe forms of COVID-19, who required mechanical ventilation or who died [7]. Our patient developed a pure gastrointestinal and hepatobiliary manifestation of COVID-19 and this has contributed to his positive outcome [7,8]. Isolated extrapulmonary manifestations of Covid-19 are more and more described. Our case report shows that severe isolated liver decompensation can occur in previously well compensated cirrhotic patient, during SARS-CoV-2 infection. Intensive symptomatic and etiologic treatment can be very efficient to restore a normal liver function. To our knowledge, this is the first case of ^{18}FDG PET-CT showing liver uptake due to COVID-19 hepatic injury with an acute on chronic hepatitis in a HBV liver-induced cirrhotic patient with abdominal and hepatobiliary COVID-19 manifestations.

Conflict of Interest

The authors declare that they have no conflict of interest.

Research Involving Human Participants

The procedure was in accordance with the 1964 Helsinki declaration. Informed consent was obtained from the patient.

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