

## INTRODUCTION

COVID19 was declared a world pandemic in March 2020. The etiology identified as (SARS-CoV-2) is implicated in developing multisystemic manifestations, including liver injury. The liver damage in COVID19 is represented as a hepatocellular and cholestatic pattern. Sclerosing cholangitis (SC) diagnosis in a critically ill patient (SC-CIP) with severe COVID19 infection can mimic other biliary pathologies on imaging; the clinical history is decisive in guiding the diagnosis.

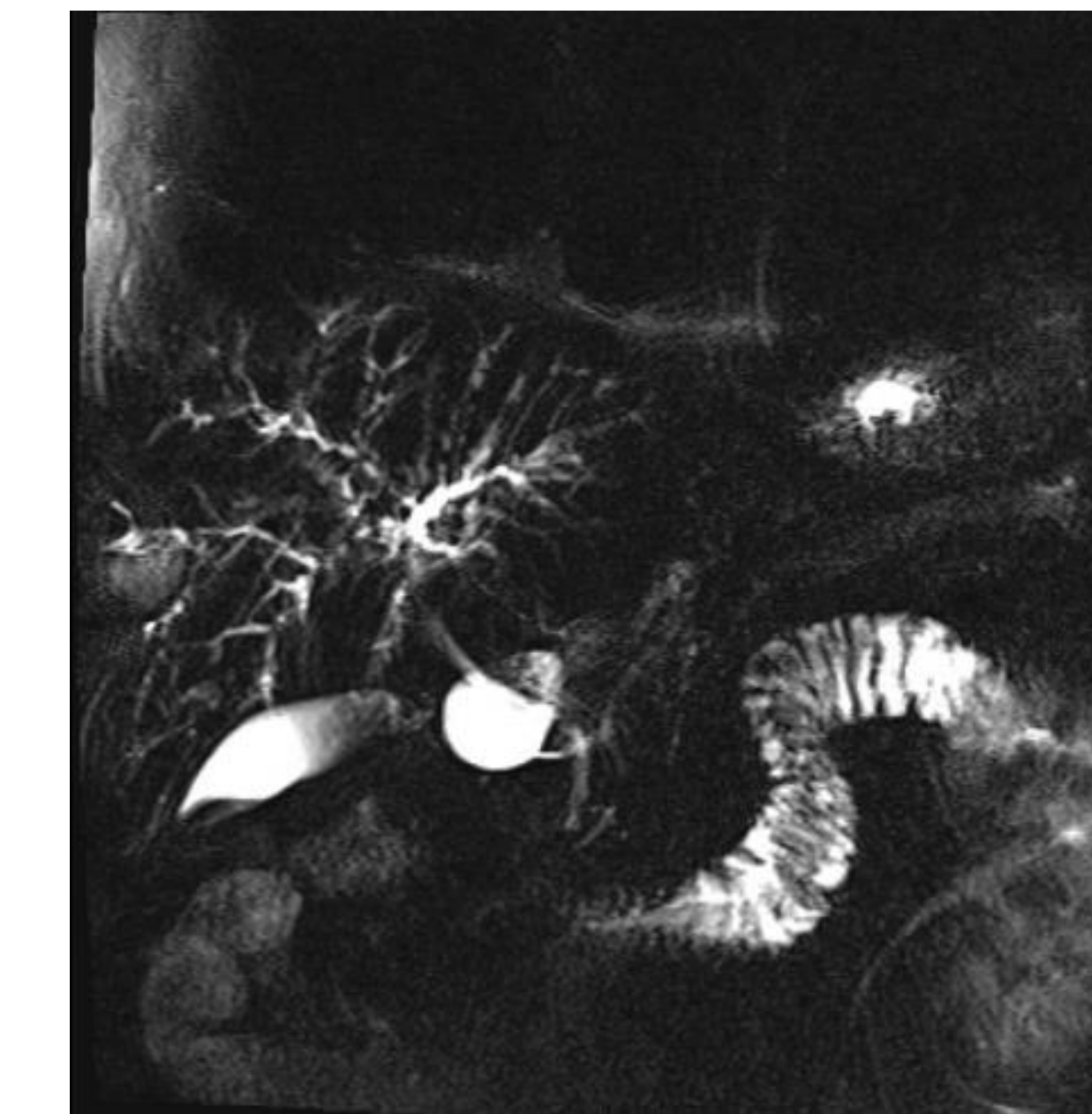
## CASE

A 52-year-old male with no prior history of liver disease is evaluated in a Hepatology clinic after presenting persistent liver enzyme elevation posterior to contracting COVID19. The patient was hospitalized for dyspnea and hypoxemia and intubated for 28 days. Since then, he has had itching, mainly at night, which interferes with his sleep. Laboratory data revealed a total bilirubin 3.2, direct bilirubin 2.4, ALP 4099, ALT 399, AST 135. Negative viral hepatitis panel and ANA. The rest of the workup was unremarkable. MRCP protocol revealed mild to moderate intrahepatic ductal dilation to the central ductal confluence and beading of the intrahepatic biliary ducts. ERCP demonstrated a normal-appearing common duct with evidence of stricturing areas within the intrahepatic biliary radicals, and a stent was placed in the right biliary system. The cytology was negative for malignancy, and colonoscopy showed no IBD. The study demonstrates SC after severe COVID19 infection with negative smooth muscle and mitochondrial antibodies. He was treated with ursodiol, which improved symptoms and liver enzymes. A repeat MRI scan after treatment showed improvement in biliary ductal dilatation.

Fig 1: Multiple biliary strictures were found in the right and left intrahepatic branches.



Fig 2: Mild to moderate intrahepatic ductal dilation to the central ductal confluence.



## DISCUSSION

COVID19-associated SC-CIP occurs after long-term intensive care treatment. These patients with severe COVID19 infection admitted to the ICU, have no evidence of prior hepatobiliary disease. The biliary epithelium is more susceptible to arterial blood flow disturbances than the hepatic parenchyma. Hence, prolonged hypotension, vasopressors, and mechanical ventilation are associated with ischemic injury of intrahepatic bile ducts. COVID19-associated factors promote the development of SC-CIP, such as virus-associated vascular damage to the peribiliary plexus or direct damage to cholangiocytes through ACE-2 receptors. Therefore, diagnosis of COVID19-associated SC-CIP is multidisciplinary and includes typical biliary imaging findings, critically ill patients with coexistence of COVID19, and negative autoimmune serologies.