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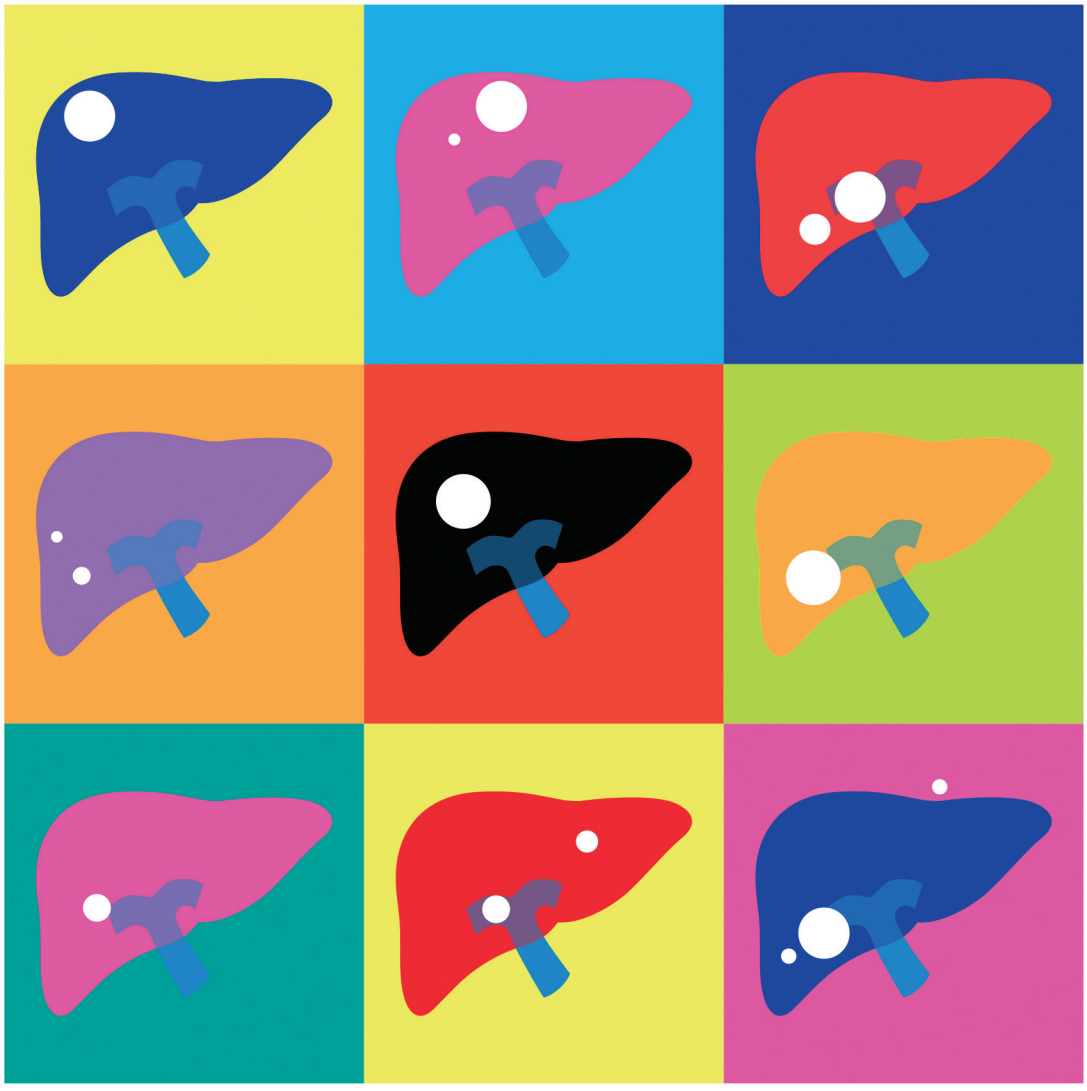

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Letter to the Editor

Forms of cholangitis to be considered after SARS-CoV-2 infection

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Dear Editor,

When the guideline concerning the management strategy for patients with liver disease amid the severe acute respiratory syndrome-coronavirus-2 (SARS-CoV-2) pandemic were published, limited data were available regarding the extent of liver disease in SARS-CoV-2 infection.[1,2] Hence, our interest was piqued when reading the report of a patient who was diagnosed with primary biliary cholangitis after coronavirus disease 2019 (COVID-19) infection.[3]

COVID-19-associated liver disease is defined as any liver injury occurring during the course and treatment of COVID-19 patients, with or without pre-existing liver disease.[4] Among these, few reports exist on cholangitis in COVID-19-infected patients with two distinct disease entities: an autoimmune disease with the characteristics of primary biliary cholangitis and cholangiopathy that resembles secondary sclerosing cholangitis.

Reports on autoimmune cholangitis are rare, as is the case in this study.[3] Bartoli et al.[5] reported a case of a 47-year-old woman who developed Guillain-Barre syndrome during intensive care for a SARS-CoV-2 infection, followed by an increase in alkaline phosphatase (ALP). Although there were no abnormalities on liver ultrasound and magnetic resonance imaging, antinuclear antibodies and antimitochondrial antibodies were highly positive. Liver biopsy results were compatible with the diagnosis of primary biliary cholangitis.[5] In addition to the authors' previous report on a patient with autoimmune hepatitis overlapping with primary biliary cholangitis,[6] Singh et al.[7] also reported a 57-year-old man who developed hypergammaglobulinemia with elevated aspartate aminotransferase, alanine aminotransferase, and γ-glutamyl transpeptidase levels. The patient tested positive for anti-mitochondrial antibody, anti-smooth-muscle antibodies, and anti-double-stranded DNA antibodies.[7]

However, another disease entity with features of secondary sclerosing cholangitis has been reported. A retrospective analysis of COVID-19 patients with bile duct injury identified abnormal liver tests with serum ALP >3× the upper limit of normal value, and abnormal findings on magnetic resonance cholangiopancreatography suggested post-COVID-19 cholangiopathy as a complication to be considered in SARS-CoV-2

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infection.[8] In some cases, orthotopic liver transplantation was considered for treatment.[9] Another retrospective analysis comprising 24 patients with COVID-secondary sclerosing cholangitis showed that the disease shares the same clinical phenotype, course, and risk factors among critically ill patients who develop secondary sclerosing cholangitis.[10]

The suggested mechanisms of liver injury in SARS-CoV-2 infection include direct cytotoxicity from active viral replication of SARS-CoV-2 in the liver, immune-mediated liver damage, hypoxic change-induced respiratory failure, vascular changes due to coagulopathy, and drug-induced liver injury.[11] The identification of $CD3^+$ T-cells, including $CD8^+$ T-cells, infiltrating the portal area and targeting the biliary epithelial cells, provides new insight in the pathogenesis of primary biliary cholangitis in patients with SARS-CoV-2 infection.[3]

In the era after the COVID-19 pandemic, various new types of cholangiopathy have been reported. Thus, further studies investigating new aspects, namely cause, pathophysiology, disease course, treatment, and diagnostic criteria, are necessary.

Authors' contribution

Manuscript preparation and article reviews: Cho JY, Lee YS, Kim SS, Song DS, Lee JH, Kim JH. All authors revised and approved the final version of the manuscript.

Conflicts of Interest

The authors have no conflicts to disclose.

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Abbreviations:

ALP, alkaline phosphatase; COVID-19, coronavirus disease 2019; SARS-CoV-2, severe acute respiratory syndrome-coronavirus-2e

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