

Title:

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Is post COVID-19 cholangiopathy an appropriate indication for liver transplantation?

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Dear Editor,

A 38-year-old male was admitted to our Emergency Department with fever up to 39.5 °C, dry cough, anosmia and dyspnea for four days. In the chest computed tomography, extensive opacity areas identified were compatible with multifocal pneumonia. A throat swab confirmed SARS-CoV-2 infection. The patient was treated in the Intensive Care Unit with mechanical ventilator support. He received hydroxychloroquine, azithromycin, piperacillin/tazobactam and convalescent plasma according to hospital standards. He required prolonged mechanical ventilation (36 days). At the end of the first month, a significant increase in cholestasis enzymes was observed in the control blood (Table 1). His treatment was reviewed and hepatotoxic agents were discontinued. Magnetic resonance cholangiopancreatography (MRCP), endoscopic retrograde cholangiopancreatography (ERCP) and liver biopsy results, which were performed respectively due to the progressive increase in cholestasis enzymes during the following period, were compatible with post-COVID-19 cholangiopathy. Liver transplantation was performed from a living donor due to the gradual increase in cholestasis enzymes for one year, despite the complete recovery of

lung function. In the third month of postoperative follow-up, liver function tests were completely normal and the patient did not have any active complaints.

Discussion

Despite the improvement in the lung involvement of COVID-19, the virus can cause long-term liver damage (1). COVID-19-associated sclerosing cholangitis describes a cholangiopathy similar to the sclerosing cholangitis in critically ill patients and was exclusively observed in patients with COVID-19 requiring admission to an Intensive Care Unit (2). Men who suffered severe disease requiring intubation and mechanical ventilation with a history of chronic disease including diabetes, hypertension, obesity and dyslipidemia are at a higher risk, as in this case (3). It has been reported that ERCP is an effective treatment method in post-COVID-19 cholangiopathy (4). However, ERCP performed in this case provided a temporary and partial improvement in bilirubin values, contrary to the literature. The persistence of the patient's liver disease for approximately one year after COVID-19 and its positive course after LT show that post-COVID-19 cholangiopathy is a suitable indication for transplantation. In this respect, it is compatible with similar cases in the literature (5). Early recognition of the occurrence of post-COVID cholangiopathy is important to decide the appropriate course of action. In cases with continuing progressive enzyme elevation, other possible causes should be ruled out with a multidisciplinary approach and they should be referred to the liver transplantation center for transplantation.

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Accepted Article

Table 1. Values of the patient's liver function tests during 15 months

	<i>Day 0</i>	<i>Day 30</i>	<i>Day 60</i>	<i>First year</i>	<i>Post-op. day 30</i>	<i>Post-op. day 90</i>
AST (U/l)	196	124	57	107	17	39
ALT (U/l)	142	202	54	87	29	44
GGT (U/l)	393	1,143	699	567	108	66
ALP (U/l)	166	465	797	576	233	174
Total bilirubin (mg/dl)	0.4	1.17	10.22	16.1	0.8	0.57
Direct bilirubin (mg/dl)	0.15	0.82	9.68	14.7	0.7	0.33
Total protein (g/l)	75.2	74	66.9	57.4	78.5	82.4
Albumin (g/l)	28.4	27	30.5	23.4	49.1	41
INR	1.05	1.15	1.68	1.8	1.05	1.1

AST: aspartate aminotransferase; ALT: alanine aminotransferase; ALP: alkaline phosphatase; GGT: gamma-glutamyl transferase; INR: international normalized ratio.