



## Case Report

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# Liver Transplant due to COVID-19-Related Drinking - A Case Report

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### Abstract

The adverse psychosocial effects of the SARS-CoV-2 pandemic are particularly stressful for those with pre-existing alcohol and substance use disorders. We present the case of a 42-year-old woman with pre-existing alcohol use disorder who increased her alcohol use in response to pandemic stress, resulting in liver failure, necessitating transplantation for survival. We discuss the role of the pandemic in alcohol and substance use exacerbations and relapses, and the clinical challenges associated with motivational engagement and accessing rehabilitation for a patient undergoing transplant evaluation and surgery during this pandemic.

**Keywords:** Addiction; COVID-19; Alcohol use disorder; Liver transplant

### Introduction

The SARS-CoV-2 (COVID-19) pandemic has infected 200 million and killed 3,000,000 worldwide [1]. Lockdowns and social distancing have been employed to reduce spread, however these measures have contributed to social isolation, financial and other stressors, causing stress and mental health disorders [2,3]. This increased stress has the potential to be the cause of the initiation, exacerbation or relapse of alcohol use disorders. We report the case of a 42-year-old woman with alcohol use disorder who experienced pandemic-related distress, leading to increased alcohol use and liver failure, necessitating transplantation for survival. We discuss how she was successfully engaged in the transplantation and recovery process during the COVID-19 pandemic.

### Case

A 42-year-old woman with no significant past medical history was transferred to our hospital for liver transplant evaluation. She presented with abdominal distension, jaundice, confusion, lower extremity weakness, frequent falls and head trauma, with easy bruising and bleeding. Bloodwork showed high aspartate aminotransferase and alanine transaminase levels (443 and 107, respectively), high total bilirubin (25.4), low albumin (2.2) and hemoglobin (10.4). Hepatitis panel was negative. Coagulation

panel showed elevated international normalized ratio (2.9), high prothrombin time (33.4) and low platelets (85,000). Vital signs were stable. Phosphatidyl-ethanol (PETH) testing performed on admission was elevated (153 ng/mL), suggesting recent alcohol use.

Physical examination revealed scleral icterus, forehead bruising, and 1/5 lower extremity muscle strength bilaterally, edema, gait ataxia, asterixis, jaundice, abdominal distention, and fluid wave with enlarged liver. Mental status exam showed constricted affect and anxious mood, delayed responses, psychomotor slowing and impoverished thoughts. She was oriented to person and place; however, she reported current year as 2020 (correct 2021) and she was confused about reason for transfer. When questioned about assigning a healthcare proxy, she requested her “puppy”.

Acute decompensated alcoholic cirrhosis was suspected. The patient was given Vitamin B12, folic acid, thiamine, and vitamin K supplementation, as well as albumin and lactulose. CT abdomen was significant for enlarged, nodular liver with fatty infiltration and perihepatic ascites. Her calculated Maddrey score was 133 (high), MELD-Na: 33 (high). It was recommended that she undergo liver transplantation due to poor prognosis.

On initial consultation with the transplant addiction psychiatrist, the patient was difficult to engage due to cognitive impairment and minimization. She reported drinking since her late teens, consuming up to 1-1.5 L of vodka daily for nearly 20

years. She reported her longest period of abstinence during her pregnancy and 8 months postpartum, after which she relapsed. She had never been in rehabilitation treatment. She reported seeing a psychiatrist for longstanding anxiety and depression, prescribed sertraline and trazodone. Family history was significant for alcohol use and liver cancer in her father, who died from suicide. Her brother had a history of cocaine use, for which he attended a rehabilitation program. She reported sobriety for the prior 6 months, however, with supportive motivational intervention, she admitted to drinking daily during the pandemic, beginning upon awakening, with morning tremulousness, frequent blackouts and falls. She attributed increased use to pandemic-related psychosocial stressors. She had lost her job due to COVID-19 and stayed home all day while her ex-husband worked. Finances had become difficult. She was also unable to visit her 19-year-old daughter at college due to school COVID protocols.

The psychiatrist met daily with the patient, and as the patient's mental status improved with lactulose, was able to forge a relationship despite the need to don full PPE due to COVID-19 protocols and immunosuppression. Family visits were restricted and family education and intervention conducted by tele-video. Alcohol rehabilitation treatment was also an issue, given the patient's physical and cognitive compromise as well as COVID-related restrictions. This necessitated finding an inpatient program that could accommodate her degree of medical compromise, could intervene via telemedicine if necessary and could collaborate with the transplantation team. She agreed to engage in a virtual rehabilitation program that our hospital developed for patients with alcoholic liver failure, offering rehabilitation in a harm reduction model, medical and psychiatric intervention, aimed at motivating patients for long-term recovery and enhanced post-transplant prognosis. Prior to her transplantation, the patient committed to tele-video and in-person rehabilitation follow-up. She was successfully transplanted with a liver donated by an individual who had died from an opioid overdose. As of this writing, the patient is in physical rehabilitation, where she continues with biweekly tele-video recovery visits. Once physical rehabilitation is complete, she will participate in tele-video or in-person rehabilitation as pandemic restrictions allow. Informed consent was obtained from the patient for publication of this case report.

## Discussion

This case illustrates three important complications of the COVID-19 pandemic in patients with alcohol use disorder: Risk for exacerbation or relapse, progressing to liver failure; difficulty engaging and motivating the patient for transplantation and alcoholism treatment with medical, psychiatric and neurocognitive comorbidities in the midst of pandemic restrictions; and challenges in accessing appropriate alcohol treatment during the pandemic.

It is well documented that psychosocial stressors and

concurrent psychiatric disorder [4], play a major role in the development of substance use disorders [5]. These factors all played a role for this patient. This relationship is related to adaptations in neural circuits stimulated by substance use [6]. Alterations in emotion regulation, stress and alcohol consumption are documented in previous economic crises. A systematic review by de Goeji et al [7], found a strong relationship between psychological distress from unemployment and increased alcohol dependence and binge drinking [7,8]. Longer duration of financial loss is associated with greater levels of anger, depression, and risk of alcohol-related mortality. The high levels of pandemic-related anxiety, paired with unemployment and social isolation, clearly led to an exacerbation of this patient's alcohol use. This is documented with other drugs, such as opioids [9]. Ironically and tragically, the liver donor that supplied this patient with lifesaving treatment had died of an opioid overdose.

There is limited data regarding alcohol use rates during the COVID-19 pandemic. Research from China showed that provinces with heightened restrictions demonstrated increased alcohol use disorders and a 10-fold increase in hazardous drinking compared to less restricted areas [10]. There have been similar findings on alcohol sales. Despite lockdown measures, "essential businesses" such as grocery and liquor stores remained open in most countries. In the U.S., alcohol sales showed a 477% increase in April 2020, compared to the same week in 2019 [11]. The closure of bars has pushed many to drink in isolation, as was the case with this patient.

With increases in alcohol consumption comes an increase in alcohol-related pathology. In a 2020 cohort study, researchers found a 34% increase in alcohol withdrawal rates in hospitalized patients when compared to 2019 [12]. In addition to withdrawal, exacerbations in alcohol use may increase rates of liver injury, as seen in our patient. Due to fear of COVID-19, many patients avoid seeking medical attention until hospitalization is unavoidable. One study found that most hospitalized patients with liver-related injury during COVID-19 had higher MELD scores and longer duration of stay, indicating more severe disease [13]. As seen with our patient, this presents a clinical challenge. Her severe disease introduced an increased urgency and limited time for intervention and establishing a strong physician-patient relationship, particularly when transplantation is necessary. Moreover, cognitive impairment from hepatic encephalopathy made engagement and decision-making difficult. After daily visits with the psychiatric and transplant teams, motivational intervention and familial support via televideo, the patient moved from pre-contemplation to action, accepting the need for transplantation and alcohol rehabilitation.

Rehabilitation is a vital component of alcohol treatment, and transplantation programs have begun to loosen the traditional 6-month abstinence criterion for transplantation, particularly for patients with severe alcoholic liver disease [14]. However, consistent alcohol use after transplantation is associated with

increased mortality [15]. Thus, motivation for alcohol recovery work before, during and after transplantation is essential. Our center has established a specialized collaborative service that integrates the liver transplantation team, psychiatry, motivation enhancement and harm reduction recovery work from initial patient presentation. The specialized track at Kyle Goldberg Turning Point (KGTP), providing recovery support, and psychiatric and medical intervention was clearly needed for this patient. KGTP remained fully operational during the pandemic, while COVID-related lockdown restrictions greatly reduced treatment center capacity in many areas [16]. In a survey of 165 rehabilitation centers, 43% reported a mandated reduction of patient capacity to meet lockdown policies. One third of these centers reported decreased patient retention, and 10% had to shut down entirely due to pandemic severity. In our patient's case, KGTP was able to deliver a fully virtual experience to minimize infection risk while the patient was in physical rehabilitation and on immunosuppression after transplantation. From physical rehabilitation, will transition to a fully remote program afterwards.

## Conclusion

This case highlights a unique challenge arising from the COVID-19 pandemic—alcohol relapse with liver failure. As the pandemic continues and stressors accumulate, it is urgent for healthcare professionals to recognize the immense risk for alcohol and other substance relapse, regardless of reason for their current presentation. In addition, clinicians must be prepared for the challenges of motivational engagement and finding alcohol and substance use treatment during the COVID pandemic. A persistent, flexible and creative approach to engagement and treatment planning is essential. While the pandemic continues, this patient survived, continues to be sober and remains engaged in recovery.

**Conflicts of Interest:** Authors Camila Ramirez, Lidia Klepacz, Karen Berger, Eldene Towey, and Stephen Ferrando declare that they have no financial interest or conflict of interest.

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