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## Correspondence

## Trends in cirrhosis hospitalizations during the COVID-19 pandemic



Dear editor:

The emergence of the COVID-19 pandemic, which started in Wuhan in 2019 changed the world and created several challenges to healthcare services. In preparation for expected increased numbers of patients with severe respiratory failure, many hospitals across the globe have intentionally reduced non-emergent procedures and hospitalizations to assure that initially scarce personal protective equipment was available and to preserve the different levels of hospital capacity. During this period, some studies reported reduced numbers of hospital admissions across different areas -from cirrhosis to heart failure [1–4]. In Portugal, the first case and subsequent beginning of the pandemic were recorded with an average delay of one month compared to other neighboring western European countries, thus allowing health authorities and medical departments to delineate strategies to deal with both COVID-19 and non-COVID-19 patients. Whether these strategies have influenced admissions for patients with decompensation of cirrhosis is poorly documented.

We report trends in hospitalizations in a tertiary, academic, high volume center by using the electronic health record system and hospital discharge database. We analysed the hospitalizations for decompensated cirrhosis from March 2, when the first patient with confirmed COVID-19 in Portugal was seen in our emergency department, to the end of the state of emergency, on May 2, 2020. We compared the trends in decompensated cirrhosis hospitalizations with those observed in the same period in the years 2015–2019 to account for the potential for residual confounding based on seasonal trends in decompensated cirrhosis hospitalizations.

Hospitalizations in adult patients with a principal diagnosis of cirrhosis based on ICD codes were included. Liver transplanted patients were excluded. Demographic, clinical and laboratory data pertaining to hospitalizations for decompensated cirrhosis were retrospectively analysed.

During this period there were 40 admissions due to decompensated cirrhosis, a number that was not significantly different from that observed in the same time period in previous years (median 38 admissions, ranging from 34 in 2015 to 42 in 2019). There was no variability in week-to-week hospitalizations for decompensated cirrhosis. 27 patients (93%) were male, the median age was 61.5 years (range 41–75). Aetiology of cirrhosis was alcohol in 80%, viral hepatitis in 15% and autoimmune hepatitis in 2.5%. 17.5% had previously diagnosed hepatocellular carcinoma.

Reason for admission was encephalopathy in 55% of patients, ascites in 12.5% and variceal bleeding in 10%. There were no significant differences in reason for admission compared to 2015–2019 (encephalopathy in 37.8% of patients, variceal bleeding in 12.8%

and ascites in 10.6%). At admission, the severity of liver disease as assessed by Child-Pugh-Turcotte and MELD-Na scores did not differ between 2020 and 2015–2019 (CPT score: 9, range 6–13 in 2020 vs 8, range 5–14 in 2015–2019,  $p=0.25$ ; MELD-Na score: 14, range 7–32 in 2020 vs 15, range 7–32 in 2015–2019,  $p=0.60$ ). Length-of-stay (LOS) was 6.5 days (range 1–27) in 2020 vs 8 days (range 1–58) in 2015–2019,  $p=0.48$ . In hospital mortality was 15.0% in 2020 vs 11.7% in 2015–2019,  $p=0.57$ .

Although severity at admission and in-hospital mortality did not vary between years, during follow-up there were significantly more readmissions in 2020 (47.5%) compared to 2015–2019 (27.7%,  $p=0.014$ ). Reasons for readmission in the former period were encephalopathy in 73.4% and ascites in 21%, while in the latter period readmissions were due to encephalopathy in 50% and ascites in 17.3%. Readmission was associated with shorter LOS of the index hospitalization, while it was not associated with age, gender, aetiology of cirrhosis, reason for admission, or severity of liver disease at index admission.

Our observations from a large tertiary care academic Hepatology center show, contrary to what has been reported in other studies, that hospitalizations, severity at admission and in-hospital mortality did not vary compared to previous years. However, the rate of readmissions was abnormally high during the pandemic, a fact that was in part associated with shorter LOS. Hospitalizations for decompensated cirrhosis are obviously non-elective, and therefore should not have been affected by the pandemic. The discrepancy between our experience and that reported by other studies may at least in part be explained by the fact that neither our hospital nor the Portuguese Government advised patients with chronic conditions to avoid hospital visits, in particular the emergency department. Another reason was that during the COVID-19 pandemic, all medical resources were focused on COVID-19 care and on minimizing face-to-face contact, clearly affecting outpatient care (reduced access to the healthcare system and remote

**Table 1**  
Admissions of cirrhotic patients.

Admissions of cirrhotic patients	2015–2019	2020
Admission	38 [34–42]	40
Age - years, median (range)	63.5 [35–91]	61.5 [41–75]
Male sex, n (%)	90%	27(93%)
Hepatocellular carcinoma, n (%)	28.7%	17.5%
<b>Cause of admission (%)</b>	37.8	55
Encephalopathy	10.6	12.5
Ascites	12.8	10
Gastrointestinal bleeding		
Child-Pugh-Turcotte	9 (range 6–13)	8 (range 5–14)
MELD-Na	14 (range 7–32)	15 (range 7–32)
Length of stay (days)	6.5 (range 1–27)	8 (range 1–58)

physician-patient interaction by phone), which could have diminished the quality of care in these especially fragile patients causing this high rate of readmissions.

These experiences, and indeed others across the globe, are nevertheless important to ensure that in the future we can improve monitoring and therapeutic approaches for patients with cirrhosis in case an unprecedented situation like the present one arises (Table 1).

#### Author contributions

Dr Gaspar and Prof Liberal were responsible for paper writing. Dr Catarina Castelo Branco participated in data analysis. Prof Macedo participated in critical revision of the manuscript for important intellectual content

#### Conflict of Interest and Disclosures

All authors disclosed no personal conflicts of interest or financial relationships relevant to this publication.

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