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## LETTER TO THE EDITOR

### Impact of delayed transit in severe COVID 19 critical care patients: A retrospective analysis



#### KEYWORDS

Transit;  
 Critical care;  
 COVID 19;  
 Constipation

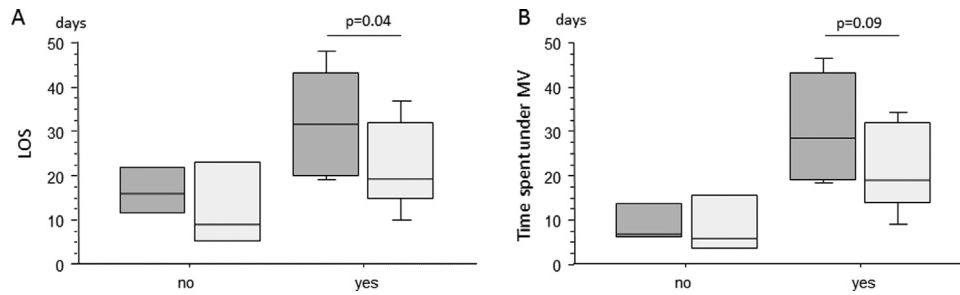
Infrequent defecation, often reported as “constipation” has been demonstrated to be associated with dismal outcomes such as mortality, longer time spent on mechanical ventilation (MV) and longer intensive care unit (ICU) length of stay (LOS) in critical care patients [1,2]. It has been shown that both duration and timing of these disorders throughout the ICU stay may affect these outcomes, with longer time lags and later occurrence during ICU course carrying a worse prognosis [3]. Despite a documented impact of COVID 19 on gut function [4], no study has investigated the transit of severe COVID 19 patients and its consequences on outcome.

Single centre, retrospective analysis of all COVID patients admitted for acute respiratory failure (ARF) in a 12 bed ICU, between February and December 2020. Patients were included unless exhibiting an exclusion criteria (Supplementary figure). Demographic data, time spent under MV, treatments, and survival were compared according to occurrence of delayed transit, as defined by a delay of 6 days or more without stool passage [3,5]. Early and late delayed transit were defined as occurring respectively immediately following ICU admission or later during the ICU stay [3]. Laxatives and enemas treatments are not protocolized in our ICU and were provided at the discretion of the physician in charge. Because of the retrospective and observational characteristics of the study, no informed consent was required, nevertheless it is specified on the admission leaflet provided to the patients and/or proxies that anonymous data could be used in an academic purpose.

Data were expressed as median [25th–75th] percentile. Continuous variables were compared using Mann–Whitney U-test. Categorical variables were compared using Fisher’s exact test. A p value of less than 0.05 was considered statistically significant.

Overall, 79 patients were screened and 51 patients were included (Supplementary figure). Age was 67.6 [56.3–73] years, 40 men, SAPS II 34 [24–42]. At least one baseline comorbidity existed in 21 patients, 15 had diabetes, 27 had systemic hypertension and 20 were obese. Overall, 36 patients were intubated and received sedation and norepinephrine. Neuromuscular blocking agents (NMBAs) were given to 34 patients. Enteral nutrition was provided to 34 patients, subsequently stopped for 20 of them, mainly for vomiting (n = 15). Laxatives were provided to 19 patients during 6 [2.3–8.0] days, 16 [8.7–19.5] days following ICU admission. Enemas were provided to 7 patients 1 [1,2] times during ICU stay. Delayed transit was evidenced in 35 (68.6%) patients (30 of whom were under MV) with a significant association with survival (21/35 vs. 4/16; p = 0.033), time spent under MV (20 [16–32] vs. 6.5 [6–16] days; p = 0.004) and LOS (20 [14–32.8] vs. 9.5 [6.5–15.5] days; p = 0.002). In ventilated patients with delayed transit (n = 30), LOS was longer in patients in late vs. early subgroup (31.5 [20–43] vs. 19.5 [15–32] days, p = 0.04). A trend in a higher time spent under MV was found as well (28.5 [19–43] vs. 19 [14–32] days, p = 0.09) (Fig. 1). Diarrhea before ICU admission occurred in seven patients. It was not associated with survival or time spent under MV. Laxatives and enemas had no effect on the studied outcomes.

Because the SARS-CoV-2 penetrates the cell through the Angiotensin Converting Enzyme 2 receptor, which is present in a large amount in the gastrointestinal tract, transit of severe ICU patients could be different as compared to general critical care population. Though limited by its methodology, this study is the first to our knowledge to provide a picture of severe COVID 19 patients transit characteristics. The main findings are as follows: i) incidence of delayed transit in this population is higher as compared to existing studies describing general ICU populations and using the same definition criterion [1,3,5,6], ii) as already suggested in previous works, occurrence of delayed



**Figure 1** (A): Length of stay according to transit subgroup. A higher LOS was found in ventilated patients in the subgroup of late delayed transit. (B): time spent under mechanical ventilation; There was a trend toward a higher time spent under MV in subgroup of late delayed transit patients.

LOS = length of stay, MV = mechanical ventilation, no = no delayed transit, yes = delayed transit, gray boxes represent "late" subgroup of patients, white boxes represent "early" subgroup of patients.

transit during the ICU stay ("late") rather than immediately following admission ("early") carries a more severe prognosis.

Prevalence of gastro-intestinal disorders in COVID 19 patients and their prognosis significance are still a matter of debate [4]. The high incidence of delayed transit in our study could be the result of the virus infection, however in our opinion this rather suggests the impact of sedative drugs and NMBAs, provided during long periods in a large subset of patients [7]. Furthermore, in a limited number of patients, occurrence of diarrhea before ICU admission was not associated with relevant outcomes. Our observational study has not been designed to test the role of drugs. Nevertheless, as already suggested by others in general ICU population [8], prophylactic treatments aiming at avoiding delayed transit during ICU stay might be a suitable option for COVID patients as well. Treatments provided for established delayed transit did not seem to favorably affect the outcome.

In conclusion, severe COVID 19 patients admitted in ICU for ARF have a high incidence of delayed transit, carrying a prognosis significance. The effect of a prophylactic management deserves to be investigated.

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## Contribution of authors

DP, BS: study concept and design; acquisition of data; analysis and interpretation of data; drafting of the manuscripts; critical revision of the manuscript for important intellectual content

FJ, OH, CD: acquisition of data; analysis and interpretation of data; critical revision of the manuscript for important intellectual content

## Declaration of interests

The authors declare that they have no known competing financial interests or personal relationships that could

have appeared to influence the work reported in this paper.

## Appendix A. Supplementary data

Supplementary material related to this article can be found, in the online version, at doi:<https://doi.org/10.1016/j.clinre.2021.101676>.

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