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Correspondence

Outcomes of patients with confirmed SARS-CoV-2 infection undergoing anesthesia: A pilot study



Available data relative to clinical characteristics and outcomes of patients with SARS-CoV-2 infection undergoing surgical intervention was limited [1,2]. Our study reports the perioperative management and 60-day morbimortality of patients with confirmed SARS-CoV-2 infection undergoing anesthetic procedures. As second aims we evaluate the association between presence of symptoms before anesthetic procedure with intraoperative management and length of stay at the hospital after the anesthetic procedure.

We conducted a single-centre, observational, prospective study in patients with COVID-19 laboratory-confirmed infection undergoing anesthetic procedures from March 27 to May 15, 2020, after approval of our ethical institutional committee.

A total of 25 patients were enrolled after giving their informed consent. Obstetric patients, children and surgical procedures under local anesthesia were excluded. Data was extract from patients' clinical and anesthetic records: gender, age, patient provenience, American Society of Anaesthesiologists physical status classification (ASA), type and duration of anesthesia procedure, urgency and risk of the procedure, according to the European Guidelines for Non-Cardiac Surgery [3] and need for intraoperative vasopressor. Postoperative data collected were: level of care in the first 24 h, need for mechanical ventilation, time to hospital discharge, time of onset of SARS-CoV-2 related symptoms (if not present previously to surgical procedure),

thromboembolic events, need for re-admission and 60-day postoperative mortality.

Analysis was performed using Mann-Whitney *U* test, Kruskal-Wallis test and Fisher exact test. A two-sided significance level of less than 0.05 was considered. Time to first event (being discharged alive or death) was analyzed in a competing risks framework using cumulative incidence methods. The respective curves were compared for significance with Gray's test. Patients who were referred to other hospitals were right censored.

Of the 25 patients with laboratory-confirmed COVID-19 infection the median age was 72 years old (IQR63–81 years), the median time of anesthesia was 1.8 h (IQR1.25–2.5 h). One patient died during anesthetic procedure. Anesthesia record was unavailable for 3 patients (12.0%). Asymptomatic patients ($n = 9$; 56.3%) before the anesthetic procedure developing difficulty in breathing and/or fever in the postoperative period, after a median time of 48 h (IQR 48 h–96 h). Median length of stay was 8 days (range 1–77 days). Three of the 18 patients transferred or discharged were re-admitted at urgency department but not hospitalized.

In Table 1 the characteristics of the patients, the anesthetic procedure and outcomes could be compared with the presence or absence of symptoms before the anesthetic procedure.

As we see in Fig. 1 the 60 days probability of being discharged alive

Table 1

ICU Intensive Care Unit, TIVA Total Intravenous Anesthesia, PNB Peripheral Nerve Block, IMV Invasive Mechanical Ventilation, IQR interquartile range.

		No. (%)			P value		
		Total (N = 25)	Non-symptomatic	Symptomatic			
Gender	Male	9 (36.0)	7 (38.9)	2 (28.6)	0.999		
	Female	16 (64.0)	11 (61.1)	5 (71.4)			
ASA physical status	II	5 (20.0)	5 (27.8)	0	0.007		
	III	11 (44.0)	10 (55.6)	1 (14.3)			
	IV	9 (36.0)	3 (16.7)	6 (85.7)			
Local of admission	Exterior	7 (28.0)	7 (38.9)	0	0.042		
	Other hospital	5 (20.0)	3 (16.7)	2 (28.6)			
	Nursery	11 (44.0)	8 (44.4)	3 (42.9)			
	Intermediate care	0	0	0			
	ICU	2 (8.0)	0	2 (28.6)			
Type of anesthesia ^a	Balanced general	9 (40.9)	7 (43.8)	2 (33.3)	0.460		
	TIVA	2 (9.1)	1 (6.3)	1 (16.7)			
	Subarachnoid block	9 (40.9)	7 (43.8)	2 (33.3)			
	Epidural	0	0	0			
	PNB	0	0	0			
	Combined	1 (4.5)	1 (6.3)	0			
	Sedation/Analgesia	0	0	0			
	Dissociative	1 (4.5)	0	1 (16.7)			
	Vasopressor support	No	11 (50.0) ^b	8 (50.0)		3 (50.0)	0.999
		Yes	11 (50.0)	8 (50.0)		3 (50.0)	
Need of IMV					0.013		

(continued on next page)

Table 1 (continued)

		No. (%)			P value
		Total (N = 25)	Non-symptomatic	Symptomatic	
Thromboembolic events	No	19 (86.4) ^a	16 (100)	3 (50.0)	0.054
	Yes	3 (13.6)	0	3 (50.0)	
Local of destination	No	22 (91.7)	18 (100)	4 (66.7)	0.103
	Yes	2 (8.3)	0	2 (33.3)	
Evolution	Exterior	0	0	0	0.024
	Other hospital	3 (12.5)	3 (16.7)	0	
	Nursery	14 (58.3)	12 (66.7)	2 (33.3)	
	Intermediate care	0	0	0	
Re-admission	ICU	7 (29.2)	3 (16.7)	4 (66.6)	0.686
	Death	4 (16.0)	1 (5.6)	3 (42.9)	
	Discharge	14 (56.0)	12 (66.7)	2 (28.6)	
	Transference	4 (16.0)	4 (22.0)	0	
Re-intervention	Remained in the hospital	3 (12.0)	1 (5.6)	2 (28.6)	0.999
	No	15 (83.3)	13 (81.3)	2 (100)	
Age (years)	Yes	3 (16.7)	3 (18.8)	0	0.501
	No	22 (91.7)	16 (88.9)	6 (100)	
Length of post-operative hospital stay until discharge (days)	Yes	2 (8.3)	2 (11.1)	0	0.064
	No	72	71	74	
Time of anesthesia duration (hours)	Median (IQR)	(63–81)	(61–81)	(81–85)	0.641
	Median (IQR)	(3–33)	(1–18)	(8–67)	
Median (IQR)	Time of anesthesia duration (hours)	1,88	1,88	1,8	
	Median (IQR)	(1.25–2.5)	(1.25–2.5)	(1.25–3.5)	

^a Unavailable data for 3 patients. Categorical data comparison analysis was made using Fisher's exact test and continuous data comparison analysis was made using Mann-Whitney *U* test. P value for 2-sided significance.

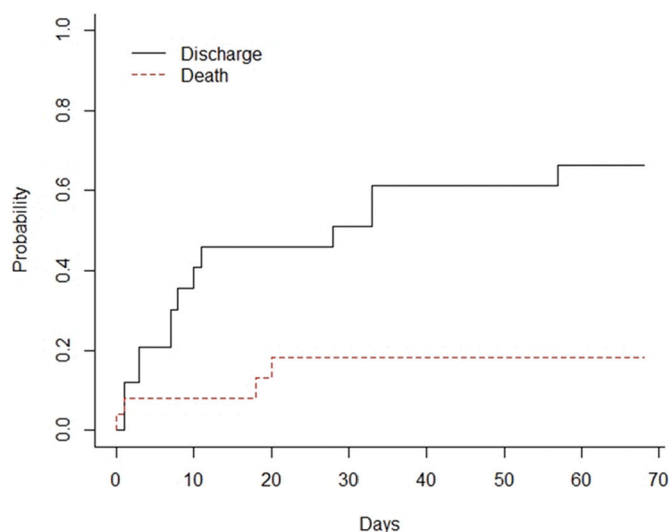


Fig. 1. Cumulative incidence of being discharged alive (“Discharge”) or in-hospital death (“Death”).

was 66.3% (CI: 44.5%;88.1%) and of death was 18.3% (CI: 1.2%;35.4%). The probability of being discharged alive or in-hospital death was assessed according to gender, age, presence of COVID-19 symptoms before surgery, patients' provenience, ASA classification, risk and urgency.

According to preceding reports [4,5], as in our study, patients with surgical indication and SARS-CoV-2 infection in the preoperative period was asymptomatic. As Lei et al.² study, most of the asymptomatic patients developed symptoms quickly after the completion of surgery. This fact suggests that surgical stress and/or anesthesia could be related

to clinical deterioration in patients with SARS-CoV-2 infection. The need of postoperative care in level II/III was less than the numbers ones reported in China, but still higher than those verified on hospitalized COVID-19 patients without undergoing anesthetic [2]. Interpretation of our results is limited by the low number of patients enrolled, nevertheless based in our data, during the SARS-CoV-2 pandemic, patients with indication to anesthetic procedure need to be screening of SARS-CoV-2 infection in order to prevent adverse perioperative outcomes. Postoperative on set of COVID-19 related symptoms was not relate with type of anesthesia.

Contributors

JM, FO, MB: Conception or design of the work; FO, PS, DF: Data collection; JB, ALD: Data analysis and interpretation; FO, MF, JL, SN, MIG, SD: Drafting the article; FO, PS, JM: Critical revision of the article; JM: Final approval of the version to be publish.

Declaration of competing interest

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.

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