COVID negative, lockdown positive: An observational, prospective comparative study about surgery and quarantine among the eldest old

COVID negativo, confinamiento positivo: estudio observacional, prospectivo y comparativo sobre el impacto preoperatorio de la cuarentena entre los pacientes más ancianos

Dear Editor,

As a sequel to our paper on perioperative assessment of the eldest old,[1] this single-center, prospective, observational, comparative study assesses the preoperative impact of confinement[1] and social distancing on the population most affected by the pandemic – a topic scarcely explored, despite abundant COVID-related research.[2–5]

Ethical approval: Ethical Committee & Board of Clinical Research (N. 190/2011), Vall d'Hebron Hospital, Barcelona, Spain. (Chaiperson Ms. Mireia Navarro): 29th July 2011.

Signed consent by the participants or their legal tutors.

We prospectively recruited a study cohort (SC) of individuals ≥ 85 years, who underwent elective surgery between July 2020 and January 2021 (after the Spanish full-lockdown and before vaccination). We matched them in a 2:1 ratio to a prospectively recruited comparison cohort (CC) within the same age-range, who had undergone exactly the same procedures before January 2020 (the lockdown started in March). We excluded day-case surgeries, emergency surgeries and procedures without anesthetic involvement. Additionally, individuals had to have no history of COVID-19 infection, and 2 negative PCR tests: before the procedure (72 h), and before discharge.

We collected preoperative demographics and comorbidities. Procedures are summarized in supplementary Table 1s. Our main aim was to compare the cohorts in terms of key components of the comprehensive geriatric assessment (CGA), including physiological reserve, polypharmacy, cognitive state, frailty, dependency, and nutrition. Secondary outcomes were in-hospital and 30-day postoperative mortality. All the variables were defined utilizing the same criteria as in our previous study.[1]

The statistical analysis was performed with IBM SPSS Statistics 26.0 (IBM Corp, Armonk, NY). Cohorts were compared with Student's, Chi square or Fischer's test. We calculated the odds ratio (OR) and the 95% confidence interval (95%CI) for mortality.

Most of the 78 patients (26 SC, and 52 CC) were males. All the other variables were evenly distributed (Table 1): none of the components of the CGA presented significant differences, nor did in-hospital mortality (p 0.1, OR 6.65, 95%CI 0.7–67.4). 30-day mortality, conversely, was higher among the SC (p 0.04, OR 9.27, 95%CI 1–87.7).

Our findings suggest that confinement and social distancing are unlikely associated with poor preoperative status. Nevertheless, 30-day mortality was higher after lockdown.

Since the groups differed neither in most demographic variables, nor in comorbidities, the matching criteria seem reasonably successful in creating a CC with a face value 'peer group' for the SC. The low number of women could be related to their increased fear of contagion, and their willingness to put off elective surgeries out of caution. Accordingly, several studies have demonstrated that women presented significantly higher levels of stress, anxiety, and 'fear of COVID',[6] and that such feelings strongly conditioned behaviors.[7]

Concerning the main outcomes, despite the reduced levels of physical and social activity,[5] we found no significant difference in any component of the CGA. The lack of association between quarantine and worse preoperative status, might be related to an inclusion bias: only the 'healthier' among sick patients are eligible for surgery.

Ruling out a worse preoperative status, the higher 30-day mortality (which happened mostly during admission) can be linked to several factors: the strict confinement and the fear of hospitalization might have contributed to pathologies being diagnosed on a later and more advanced stage of evolution; the stressed healthcare systems with overwhelmed and overworked staff, overcrowded centers, and persistent shortage of beds might have impacted on the quality of care,[3,4] caused extra delays in diagnosis, and forced conservative treatments on individuals requiring surgery; furthermore, the risk of COVID infection could have encouraged early (or even premature) discharges. Finally, the inclusion bias inherent to the surgical process might be obscuring the impact of confinement on preoperative status. Namely, healthier individuals with higher reserves are more eligible for surgery.

The main limitation to this study is the number of patients that did not allow for multivariable modelling. However, this population, which was already a minority before COVID, was further reduced due to the pandemic. Additionally, in order to assess the impact of the isolation we could only include cases between the end of the full lockdown and the beginning of massive vaccination (which increased the mobility and socialization), thereby limiting the recruiting period.

To conclude, although the strict lockdown was not associated with worse preoperative factors – including the specifically geriatric ones – elderly patients are nonetheless vulnerable to surgery, possibly due to logistic and general conditions associated to the COVID context, which can justify their non-negligible mortality rate. These findings are particularly relevant to visibilize potential effects indirectly associated with confinements on vulnerable populations.

Authors' contributions

All authors contributed to the study conception and design. Material preparation, and data collection were performed by B. Gonzalez Rodriguez, L.C. Barrera and X. Redondo Herrera. The data analysis was performed by Dr. M. de Miguel and Dr. A. Pelavski. The first draft of the manuscript was written by Dr. A. Pelavski and all authors commented on previous versions of the manuscript. All authors read and approved the final manuscript.

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Appendix A. Supplementary data

Supplementary data associated with this article can be found, in the online version, at doi:10.1016/j.regg.2022.03.006

[1] Confinement, quarantine, and lockdown are used interchangeably.

Table 1
Preoperative.

	Study cohort (SC) 26	Control cohort (CC) 52	*p*
Demographic, comorbidities			
Male/female	**23 (88.5%)/3 (11.5%)**	**27 (51.9%)/25 (48.1%)**	**0.02***
Median age	88 (85–93)	87 (85–96)	0.5
Body mass index (kg/m^2)	25.7 ± 2.8	25.9 ± 4.4	0.8
Patients living in elderly-care institutions	2 (7.7%)	2 (3.8%)	0.4
ASA[a] ≥ 3	17 (65.4%)	30 (57.7%)	0.4
Congestive heart failure	6 (23.1%)	10 (19.2%)	0.7
Ischemic heart disease	6 (23.1%)	12 (23.1%)	>0.99
Peripheral vascular disease	10 (38.5)	15 (28.8)	0.4
Atrial fibrillation	8 (30.8%)	15 (28.8%)	0.9
Hypertension	23 (88.5%)	38 (73.1%)	0.1
COPD[b]	8 (30.8%)	14 (26.9%)	0.7
Anemia	15 (57.7%)	34 (65.4%)	0.5
Cerebrovascular disease	5 (19.2%)	8 (15.4%)	0.7
Dementia	1 (3.8%)	8 (15.4%)	0.1
Osteoporosis/osteoporotic fracture	3 (11.5%)	12 (23.1%)	0.2
Neoplasms	15 (57.7%)	31 (59.6%)	0.8
Diabetes	10 (38.5%)	19 (36.5%)	0.9
Chronic renal failure	15 (57.7%)	18 (34.6%)	0.09
Charlson's comorbidity index	4 (1-9)	3 (1-7)	0.7
Outcome variables: comprehensive geriatric assessment			
Low reserve (≤3 METS[c])	6 (23.1%)	22 (42.3%)	0.1
Polypharmacy (≥7 prescription drugs)	15 (57.7%)	25 (48.1)	0.4
Impaired cognition (MMSE[d] ≤ 26)	18 (69.2%)	31 (59.6%)	0.4
Fried's frail phenotype			0.2
Non-frail (0–1 factors)	9 (34.6%)	17 (32.7%)	
Pre frail (2–3 factors)	13 (50%)	29 (55.8%)	
Frail (>3 factors)	4 (15.4%)	6 (11.5%)	
Katz's index of activities of daily living			0.4
Independent	22 (84.6%)	42 (80.8%)	
Partially dependent	1 (3.8%)	7 (13.5%)	
Totally dependent	3 (11.5%)	2 (3.8%)	
Mini-nutritional assessment			0.8
Normal nutritional state (12–14)	10 (38.5%)	18 (34.6%)	
Nutritional risk (8–11)	13 (50%)	24 (46.2%)	
Malnutrition (<7)	3 (11.5%)	10 (19.2%)	
In-hospital mortality	3 (11.5%)	1 (1.9%)	0.1
30-Day mortality	**4 (15.4%)**	**1 (1.9%)**	**0.04***

[a] ASA, American society of Anesthesiology score.
[b] COPD, congestive obstructive pulmonary disease.
[c] METS, metabolic equivalent of task.
[d] MMSE, mini-mental state examination.
* statistically significant (i.e. p<0.05).

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