Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

how several factors interact with each other to create a specific response in the brain producing PDPH, and how this response can guide treatment strategies.

Although the association between prolactin and chronic headache has been shown, the association between chronic PDPH and prolactin has not been determined. Studies with appropriate sample sizes are needed to compare chronic PDPH between postpartum women, particularly breastfeeding women, and a control group of women who are not pregnant or postpartum, since concentrations of prolactin must be different between groups. A clinical trial to assess the effect of dopamine receptor agonists to alleviate chronic PDPH should also be considered. These studies should clarify the sex-specific pathophysiology of chronic headache with a focus on prolactin.

Declaration of interest

The author declares that they have no conflict of interest.

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Should asymptomatic patients testing positive for SARS-CoV-2 wait for elective surgical procedures?

Naama Lieberman[1], Andrew Racine[2], Singh Nair[1], Peter Semczuk[3], Omid Azimaraghi[1], Jeffrey Freda[4], Matthias Eikermann[1,5,*] and Karuna Wongtangman[1,5]

[1]Department of Anesthesiology, Montefiore Medical Center, Albert Einstein College of Medicine, Bronx, NY, USA, [2]Department of Pediatrics, Montefiore Health System Albert Einstein College of Medicine, Bronx, NY, USA, [3]Moses and Wakefield Campuses, Montefiore Medical Center, Bronx, NY, USA, [4]Surgical Services, Montefiore Medical Center, Albert Einstein College of Medicine, Bronx, NY, USA and [5]Department of Anesthesiology, Faculty of Medicine, Siriraj Hospital, Mahidol University, Bangkok, Thailand

*Corresponding author. E-mail: meikermann@montefiore.org

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Editor—Recent data suggest that patients with SARS-CoV-2 infection carry a higher risk of postoperative respiratory complications and mortality within 7 weeks of diagnosis,[1,2] such that the thresholds for surgery during the COVID-19 pandemic should be higher than during normal practice.[3] The American Society of Anesthesiologists (ASA) recommends that elective surgery be delayed for 4 weeks even in asymptomatic patients testing positive for SARS-CoV-2.[4] However, these recommendations are based on data obtained during previous surges where elective surgery was mostly abandoned and only urgent and emergent procedures were allowed.[1,5,6] Given the high transmissibility of the Omicron SARS-CoV-2 variant, it is likely that we will see more asymptomatic SARS-CoV-2-positive patients. How long should these patients wait for their elective surgical procedures: 5–10 days which would address the risk of virus transmission, or 4 weeks?

To explore this question, we retrieved data of all patients aged 18 yr or older (n=28 390) who presented with a positive

polymerase chain reaction (PCR) test for SARS-CoV-2 ('COVID-19 test') at Montefiore Health System (MHS) in New York City and Westchester County, NY, USA from March 2020 to January 2022. Four surges of the COVID-19 pandemic were reported in New York starting in March 2020 (first surge), November 2020 (second surge), July 2021 (third surge), and December 2021 (fourth surge). We examined trends in the rate of hospital admissions, ICU admissions, and COVID-19 pneumonia incidence across different surges. We also analysed changes among admitted patients in adverse discharge disposition,

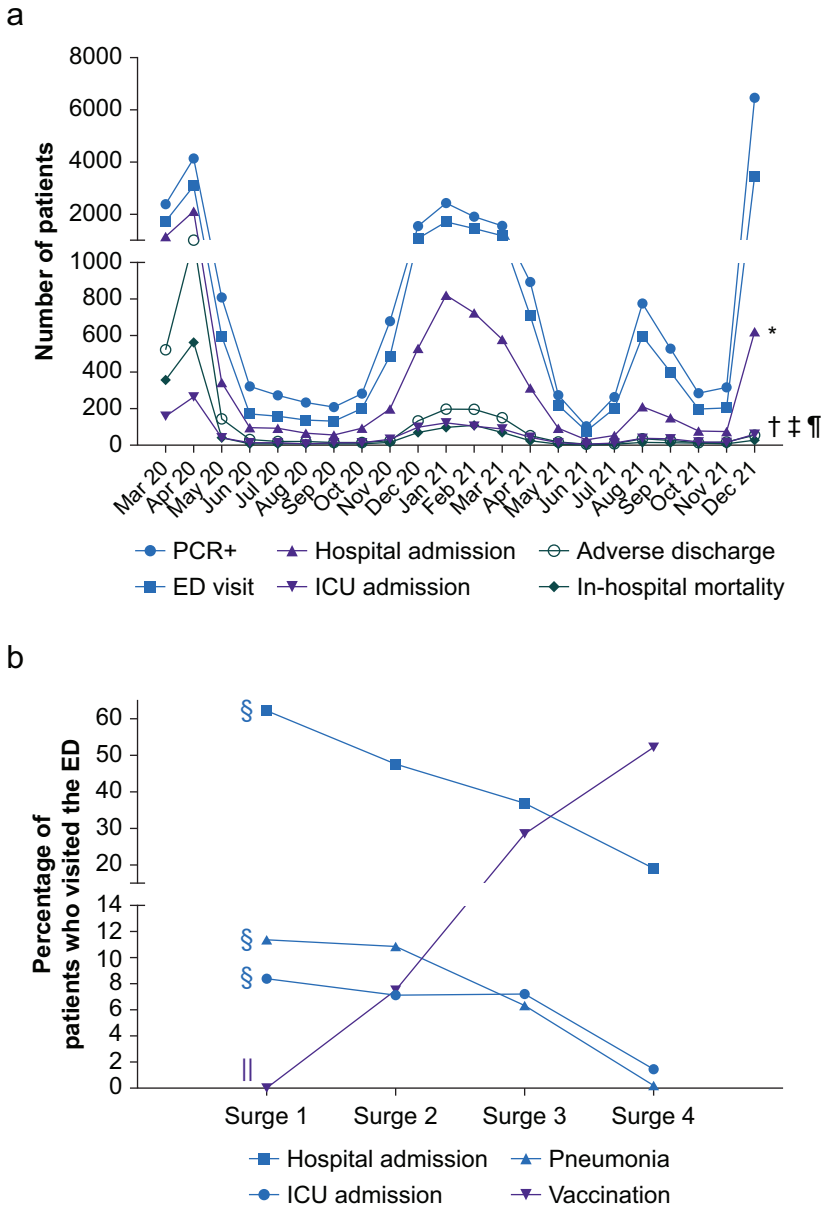

Fig 1. (a) Healthcare utilisation and outcomes of patients who presented to the Montefiore Health System with a positive SARS-CoV-2 PCR test. Four surges of the COVID-19 pandemic were reported in New York City starting in March 2020 (first surge), November 2020 (second surge), July 2021 (third surge), and December 2021 (fourth surge). Compared with previous surges, the COVID-19 pandemic in the fourth surge was associated with lower healthcare utilisation (purple lines), including hospital admission (*adjusted odds ratio [aOR]: 0.41; 95% confidence interval [CI]: 0.39–0.43; $P<0.001$), ICU admission (†aOR: 0.83; 95% CI: 0.74–0.93; $P<0.001$) and lower adverse outcomes (green lines), including loss of ability to live independently (‡aOR: 0.26; 95% CI: 0.23–0.29; $P<0.001$) and in-hospital mortality (¶aOR: 0.31; 95% CI: 0.26–0.36; $P<0.001$). (b) Hospital admissions, ICU admissions, and diagnosed COVID-19 pneumonia in patients as a fraction of patients who presented to the emergency department with a positive SARS-CoV-2 PCR test. COVID-19 pneumonia diagnosis rates, hospital admission rates, and ICU admission rates decreased from the first to the fourth surge, §($P<0.001$ for time-dependent effect). Vaccination rates increased from the first to the fourth surge, ‖($P<0.001$ for time-dependent effect). ED, emergency department; PCR, polymerase chain reaction.

which we define as discharge to a skilled nursing facility of a patient who lived at home before hospital admission.[7] We used multivariable logistic regression analyses adjusted for age, sex, BMI, Charlson Comorbidity Index, race, and ethnicity for calculating the adjusted odds ratios (aOR) and absolute adjusted risk differences (aARD).

The total number of patients with a positive COVID-19 test taken at MHS during the fourth surge (starting from December 2021) was very high and close to the total numbers in previous, longer surges (Fig. 1a). However, the number of hospital admissions and ICU admissions, COVID-19 pneumonia incidence, adverse discharge, and mortality were substantially lower during the fourth surge. Out of patients with a positive SARS-CoV-2 PCR test who visited the emergency department during the first to third surges (n=14 725), 53.7% were admitted to the hospital, 10.7% had diagnosed COVID-19 pneumonia, and 7.7% were admitted to ICU. By contrast, during the fourth surge to date (n=4157), only 19.1% (aOR: 0.41; 95% confidence interval [CI]: 0.39–0.43; P<0.001, aARD: 22.4%, 95% CI: 21.3–23.4%; P<0.001) were admitted to the hospital, only 0.2% (aOR: 0.02; 95% CI: 0.02–0.03; P<0.001, aARD: 16.4%, 95% CI: 15.8–16.9%; P<0.001) were diagnosed with COVID-19 pneumonia, and only 1.4% (aOR: 0.83; 95% CI: 0.74–0.93; P<0.001, aARD: 2.0%, 95% CI: 0.8–3.3%; P<0.001) were admitted to ICU (Fig. 1b).

During previous surges (March 2020 to November 2021), 33.6% of the 7872 hospitalised patients with positive PCR tests lost the ability to live independently and 18.4% died in hospital. By contrast, during the fourth surge (n=538), 10.4% of patients were admitted to a nursing home (aOR: 0.26; 95% CI: 0.23–0.29; P<0.001, aARD: 27.6%, 95% CI: 25.1–30.0%; P<0.001), and 5.2% died in hospital (aOR: 0.31; 95% CI: 0.26–0.36; P<0.001, aARD: 14.7%, 95% CI: 12.7–16.6%; P<0.001). There are multiple reasons for the lower severity of disease experienced during the ongoing COVID-19 surge compared with previous surges including lower virulence of the Omicron variant, higher vaccination rates (which increased at MHS from 0% during the first surge to 7.5%, 28.5%, and 52.2% during subsequent surges; Fig. 1b), and improved treatment.[8]

Regardless of its mechanism, the anaesthetist should interpret with caution the current ASA recommendations for asymptomatic patients with a positive COVID-19 test, which are based on outcomes during previous COVID-19 surges. The anaesthetist should assess a patient's readiness for surgery comprehensively rather than delaying a case just based on a positive test for SARS-CoV-2. Surgical risk assessment is needed to predict the value of care of a surgical procedure: optimal timing includes the primary disease, comorbidities, vaccination status, and surgical complexity. Such a comprehensive approach could help implement a modified 'green pathway' in which vaccinated asymptomatic patients could safely undergo elective surgery within 5–10 days after diagnosis.[9]

This report has limitations. A small fraction of patients from the current surge are still in hospital. Our data do not directly address the question as to whether surgical outcome during the first weeks after a positive SARS-CoV-2 test is impaired. A comparison of surgical outcomes during the first and current surge is challenging, since elective surgery was stopped during the first surge but not during the ongoing surge, so the composition of surgical candidates during the two time periods is not comparable.

Based on our data, the recommended waiting times for elective surgery in asymptomatic patients who present with a positive SARS-CoV-2 test need to be reconsidered. The US Center of Disease Control and Prevention has shortened the recommended time for isolation of the public.[10] At our institution, we concluded that a 10-day delay from the first day of symptoms or from the day of the first positive SARS-CoV-2 test is sufficient during the current surge. This decision is based on the assumption that by 10 days the patient is no longer infectious (therefore not in a condition to put healthcare personnel at risk) and does not appear to be at risk for poor outcome. Genomic identification of variants is becoming more widespread as local and regional health departments recognise the importance of this information for planning. As new strains emerge, recommendations may have to be modified based on new information about the transmissibility and virulence of each new emerging strain.

Declarations of interest

ME has received grants for investigator-initiated trials not related to this manuscript from Merck & Co. and served as a consultant on the advisory board of Merck & Co. during the conduct of the study. The funders had no role in the study design or conduct, data collection, management, analysis, or interpretation, preparation, review, or approval of the manuscript, or the decision to submit the manuscript for publication. NL, AR, SN, PS, OA, JF, and KW declare that they have no conflicts of interest.

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Assessment of a splitter for protective dual-patient ventilation in patients with acute respiratory distress syndrome

Daniel H. Arellano[1,2], Eduardo A. Tobar[1], Marioli T. Lazo[1], Veronica A. Rojas[1], Abraham I. J. Gajardo[1], Nicolás Montecinos[3], Tomás Regueira[4] and Rodrigo A. Cornejo[1,5,*]

[1]Unidad de Pacientes Críticos, Departamento de Medicina, Hospital Clínico Universidad de Chile, Santiago, Chile, [2]Departamento de Kinesiología, Facultad de Medicina, Universidad de Chile, Santiago, Chile, [3]Centro de Pacientes Críticos, Clínica Las Condes, Santiago, Chile, [4]Facultad de Medicina, Universidad Finis Terrae, Santiago, Chile and [5]Center of Acute Respiratory Critical Illness (ARCI), Santiago, Chile

*Corresponding author. E-mail: racornej@gmail.com

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Editor—In dual-patient ventilation, the tidal volume (V_T) delivered to patients depends on their respiratory mechanics, which can vary significantly between them.[1–4] Thus, dual-patient ventilation might provide non-protective high V_T to one patient, while supplying inadequate ventilation to the other because of low V_T.[5,6] To address this issue, splitters capable of regulating V_T individually through implementation of valves and flow limiters have been devised. Dual-patient ventilation has been used in patients with similar respiratory mechanics, both without and with a splitter.[4,7] The effect of changes in compliance (C_{rs}) or inspiratory resistance (R_{aw}) in one patient during dual-patient ventilation with a splitter has only been assessed on test lungs.[7–9]

Shortages of mechanical ventilators during the COVID-19 pandemic prompted the development of mechanical ventilators and splitter prototypes, including under the '*A breath for Chile*' initiative (sponsored by the Ministry of Sciences). In this study, we assessed the performance of the splitter after the electromedical safety inspection. Our objective was to evaluate dual-patient ventilation, without and with a splitter, when one subject develops sudden changes in respiratory mechanics, extreme air leaks, airway disconnection, or airway occlusion in experimental and clinical assessments.

First, dual-patient ventilation was used to ventilate two test lungs (SmartLung 2000; IMT Analytics®, Buchs, Switzerland), without and with a splitter, using a mechanical ventilator (PB 840, Medtronic®, Minneapolis, MN, USA). Pressure-controlled mode was programmed to deliver a V_T of 400 ml to each test lung at the study onset, with a ventilatory frequency (VF) of 15 bpm, fraction of inspired oxygen (FiO_2) 0.21, and PEEP 9 cm H_2O. The C_{rs} of lung A was modified (75, 60, and 25 ml [cm H_2O]$^{-1}$) every 15 min with inspiratory resistance (R_{aw}) of 5 and 20 cm H_2O s L^{-1}, while C_{rs} and R_{aw} of lung B remained constant (75 ml [cm H_2O]$^{-1}$ and 5 cm H_2O s L^{-1}, respectively). The R_{aw}/C_{rs} combinations in lung A were repeated while lung B remained with C_{rs} 60 and 25 ml (cm H_2O)$^{-1}$, with R_{aw} 5 and 20 cm H_2O s L^{-1}. Five measurements of R_{aw}/C_{rs} combination were obtained at the end of each 15-min period. Finally, occlusion (R_{aw} 200 cm H_2O s L^{-1}) and air leak manoeuvres were performed in test lung A. During these modifications, V_T, PEEP, and airway pressures in both lungs were recorded (pneumotachograph FluxMed GrE, MBMed®, Buenos Aires, Argentina).

Second, dual-patient ventilation with a splitter (NeyunSplit, DTS®, Santiago, Chile) was performed to ventilate both a test lung and a patient. Five patients older than 18 yr with COVID-19-associated acute respiratory distress syndrome (ARDS), haemodynamic stability, and deep sedation were included. The active humidification system was replaced by a heat and moisture exchanger filter (HMEF). The mechanical ventilator was set to pressure-controlled mode to deliver a V_T of 6 ml kg^{-1} to the patient and a similar V_T to the test lung. The VF, FiO_2, and PEEP programmed for the patients were maintained. The same R_{aw}/C_{rs} combinations and occlusion and air leak manoeuvres used in the experimental phase were performed in a test lung (further details of ventilation splitting are provided as Supplementary Fig. 1).