with COVID-19 who require artificial ventilation would take some pressure off the strained health system. There are thousands of anesthesia machines distributed throughout the surgical blocks of Brazilian hospitals ready to be used.

Conflicts of interest

The authors declare no conflicts of interest.

References

1. AMIB divulga primeira parte do censo 2016 com mapeamento das UTIs brasileiras; 2016. Available from https://www.amib.org.br/noticia/nid/amib-divulga-primeira-parte-do-censo-2016-com-mapeamento-das-utis-brasileiras/ [accessed 08.04.20].
2. A matemática das UTIs: 3 desafios para evitar que falte cuidado intensivo durante a pandemia no Brasil; 2020. Available from https://www.bbc.com/portuguese/brasil-52137553 [accessed 08.04.20].
3. Saúde M. Coronavírus Brasil; 2020. Available from https://covid.saude.gov.br [accessed 08.04.20].
4. Grasselli G, Zangrillo A, Zanella A, et al. Baseline characteristics and outcomes of 1591 patients infected with SARS-CoV-2 admitted to ICUs of the Lombardy Region, Italy. JAMA. 2020.
5. There Aren't enough ventilators to cope with the coronavirus; 2020. Available from https://www.nytimes.com/2020/03/18/business/coronavirus-ventilator-shortage.html [accessed 08.04.20].
6. APSF/ASA. APSF/ASA guidance on purposing anesthesia machines as ICU ventilators; 2020. Available from https://www.asahq.org/in-the-spotlight/coronavirus-covid-19-information/purposing-anesthesia-machines-for-ventilators [accessed 12.04.20].

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Spinal anesthesia in COVID-19 patients, more research is needed

Anestesia espinhal em pacientes com COVID-19, mais pesquisa é necessária

Dear Editor,

It has not been long since the pandemic engulfs the whole world. In the same short period of time, some comprehensive advice has been given to health care providers, particularly anesthetists, about patient care during the Coronavirus 2019 (COVID-19) outbreak.[1,2] Neuraxial blocks may be considered preferred methods of anesthesia in the presence of respiratory disease risks. There are few valuable reports regarding the safety of neuraxial anesthesia in COVID-19 patients recently published.[3] While spinal anesthesia has some advantages in COVID-19 patients, there are other considerations in the choice of anesthesia technique that require further research:

1. Coagulation derangement is not uncommon in Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) infected patients.[4,5] Although hypercoagulation status is more common in these patients, the unknown nature of this disease and the medications the patient is taking require special attention to the preoperative coagulation status, especially when dural puncture for intrathecal injection of local anesthetics is to be performed on a patient.
2. The coexistence of myocardial involvement can make anesthesia challenging. Many of COVID-19 patients have underlying cardiovascular disease and a lot of them develop acute cardiac injury in the course of the illness. Potential long-term consequences of the disease is another worrying issue that could be problematic in the future.[6,7] Therefore, special attention to the patient's heart condition before spinal anesthesia is of particular importance so that if there is a cardiac disorder, appropriate measures can be taken to maintain hemodynamic stability and prevent unwanted hypotension.
3. Spreading the SARS-CoV-2 to the central nervous system can cast doubt on the safety of spinal anesthesia.[8,9] The mechanism of this neuroinvasion is still not fully understood. Viral encephalitis, infectious toxic encephalopathy and acute cerebrovascular events are three nervous system disorders related to coronavirus infections. Maybe neurological symptoms such as headache, consciousness disorder, paresthesia, and other pathological signs which are seen in COVID-19[8] interfere with block evaluations following spinal anesthesia.
4. Particular attention should be paid to airway exams before performing any regional anesthesia. If the COVID-19 patient is considered a case of difficult airway, it may be futuristic to have general anesthesia at the outset, so that if regional anesthesia suddenly fails, airway management will not be in an emergency situation, what would increase the risk of virus transmission to the operating room medical personnel.
5. COVID-19 patients are more anxious than other surgical patients entering the operating room.[10] The administration of an anxiolytic such as midazolam as a medication

prior to anesthesia in these patients is not just a suggestion but a strong recommendation.

Lastly, the most important thing in anesthesia management is to establish a balance between costs (disadvantages) and benefits. Undoubtedly, keeping away from the patient's airway is important for the protection of health care providers, but the distance from the airway cannot be used as a basis for anesthesia management. Despite all mentioned doubts about the safety of spinal anesthesia in COVID-19 patients, this technique can still be one of the recommended methods to reduce the risk of infecting the operating room staff, if all the above considerations are taken into account. In other words, the relative and absolute contraindications for spinal anesthesia are precisely the same for COVID-19 and nonCOVID-19 patients. Therefore, hemodynamically unstable patients, patients suffering from severe respiratory distress, or those presenting with coagulopathy, for example, are not suitable to undergo intrathecal anesthesia.

Conflicts of interest

The authors declare no conflicts of interest.

References

1. Quintão VC, Simões CM, Navarro LH, et al. O Anestesiologista e a COVID-19. Rev Bras Anestesiol. 2020, http://dx.doi.org/10.1016/j.bjan.2020.03.002 [online ahead of print].
2. Wax RS, Christian MD. Practical recommendations for critical care and anesthesiology teams caring for novel coronavirus (2019-nCoV) patients. Can J Anaesth. 2020, http://dx.doi.org/10.1007/s12630-020-01591-x [online ahead of print].
3. Chen R, Zhang Y, Huang L, et al. Safety and efficacy of different anesthetic regimens for parturients with COVID-19 undergoing cesarean delivery: a case series of 17 patients. Can J Anaesth. 2020, http://dx.doi.org/10.1007/s12630-020-01630-7 [online ahead of print].
4. Yin S, Huang M, Li D, et al. Difference of coagulation features between severe pneumonia induced by SARS-CoV2 and non-SARS-CoV2. J Thromb Thrombolysis. 2020, http://dx.doi.org/10.1007/s11239-020-02105-8 [online ahead of print].
5. Han H, Yang L, Liu R, et al. Prominent changes in blood coagulation of patients with SARS-CoV-2 infection. Clin Chem Lab Med. 2020, http://dx.doi.org/10.1515/cclm-2020-0188 [online ahead of print].
6. Bansal M. Cardiovascular disease and COVID-19. Diabetes Metab Syndr. 2020;14:247–50.
7. Ferrari R, Di Pasquale G, Rapezzi C. Commentary: What is the relationship between Covid-19 and cardiovascular disease? Int J Cardiol. 2020, http://dx.doi.org/10.1016/j.ijcard.2020.03.074 [online ahead of print].
8. Wu Y, Xu X, Chen Z, et al. Nervous system involvement after infection with COVID-19 and other coronaviruses. Brain Behav Immun. 2020, http://dx.doi.org/10.1016/j.bbi.2020.03.031 [online ahead of print].
9. Baig AM, Khaleeq A, Ali U, et al. Evidence of the COVID-19 virus targeting the CNS: tissue distribution. Host–virus interaction, and proposed neurotropic mechanisms. ACS Chem Neurosci. 2020;11:995–8.
10. Kim SW, Su KP. Using psychoneuroimmunity against COVID-19. Brain Behav Immun. 2020, http://dx.doi.org/10.1016/j.bbi.2020.03.025 [online ahead of print].

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The paradox of COVID-19 and pediatric anesthesiology: opinion of the Pediatric Anesthesia Committee of the Brazilian Society of Anesthesiology

Anestesiologia pediátrica e o paradoxo da COVID-19: opinião do Comitê de Anestesia em Pediatria da Sociedade Brasileira de Anestesiologia

Dear Editor,

During this initial phase of the COVID-19 pandemic, caused by the SARS-CoV-2 virus, anesthesiologists have been facing questions from all directions. For those who work with children, the uncertainties are even greater, considering the scarce evidence available on the pediatric population. Are children, in fact, spared from the most severe forms of the disease? What is the transmission potential of the asymptomatic and mild forms? Which patients should be considered high risk for SARS-CoV-2 transmission? How should we manage airways? Societies of anesthesiology and hospitals have developed their protocols and recommendations based, almost exclusively, on data from adult patients. Therefore, adapting those recommendations to children requires, in addition to common sense, knowledge of the specificities of such a heterogeneous group.

Data from China, the United States and Italy have shown that children comprise 1–5% of COVID-19 cases diagnosed.[1] The Virtual Pediatric Systems Collaborative Group – that receives information from pediatric ICUs of 177 hospitals, predominantly American – registered, until April 14, 2020, 186 ICU COVID-19, related admissions with three deaths.[2] The largest case series in children published to date, from