

Case Report of General Anesthesia After Asymptomatic SARS-Cov-2-Infection

Hendrik B and Michael B*

Department of Anesthesiology, Intensive Care Medicine and Pain Therapy, Kliniken des Main-Taunus-Kreises GmbH, Germany

***Corresponding author:**

Michael Booke,
Department of Anesthesiology, Intensive Care Medicine
and Pain Therapy, Kliniken des Main-Taunus-Kreises
GmbH, Kronberger Str. 36 65812 Bad Soden, Germany,
Phone: +49 6196 657271,
E-mail: mbooke@kliniken-mtk.de

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Hendrik B, Michael B. These authors are contributed equally to this article

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1. Abstract

From our experience and description of colleagues, SARS-CoV-2-patients who are ventilated on intensive care unit (ICU) require complex sedation.

We made similar observations in a 47-year-old male patient who underwent elective surgery after an asymptomatic SARS-CoV-2-infection. Our patient needed high dosages for induction and maintenance of general anesthesia. Postoperatively, he showed reduced blood oxygenation. The high dosage of narcotics we needed for induction and maintenance of general anesthesia, might be linked to the patient's prior infection with the SARS-CoV-2-virus. Hence, we recommend inquiring about previous SARS-CoV-2-infection preoperatively and closely monitoring the patient postoperatively.

2. Introduction

From treating COVID-patients on our intensive care unit we have learned, that patients suffering from COVID-19 with required mechanical ventilation need significantly higher doses of narcotics and analgesics to maintain an adequate level of sedation. Similar observations have been made by other colleagues [1-3]. It is unclear, whether these observations could be made in patients with different courses of Covid-19-infection or even after infection has ended.

3. Case Presentation

We hereby present a case of a 47-year-old male patient with a slightly elevated body mass index of 28,9 (99kg, 189cm) who suffered from a chronically compressed supraspinatus tendon and was scheduled for elective outpatient surgery. Previously undergone general anesthesia was uneventful. Prior to his operation, he got infected with the COVID-19-virus but did not suffer any symptoms. The infection was only recognized by chance through our preoperative routine screening for the COVID-19-virus (SARS-CoV-2-PCR, Roche, measured on Cobas 8800). As a result, the surgery was postponed until the SARS-CoV-2-PCR (PCR = Polymerase Chain Reaction) obtained a negative result, which was two weeks later.

Intraoperatively, the patient required extremely high doses of sufentanil (50µg intravenously for induction) and propofol (400mg intravenously for induction). The arthroscopic surgery took 37 minutes. General anesthesia was maintained using additional alfentanil and desflurane. An endtidal expiratory concentration of 8,2 Vol% of desflurane was required to keep our patient anesthetized, although desflurane has a MAC-value of only 6,0 Vol% in patients of his age [4]. The MAC (minimal alveolar concentration) stands for the potency of an inhalational anesthetic, reflecting the

median dose in Vol% needed to keep patients pain free without any other anesthetic, especially without a narcotic. Usually 4 Vol% of desflurane is sufficient to keep patients anesthetized when combined with lower doses of sufentanil. Our patient required more than twice as much.

The patient was ventilated with a positive endexpiratory pressure of 10 cm H₂O and a driving force of 12 cmH₂O. The compliance was 57 ml/cmH₂O. A respiratory minute volume of up to 9 l/min was achieved with a respiratory rate of 15 per minute, leading to an abnormally elevated endtidal pCO₂ between 57 and 61 mmHg. Postoperatively in recovery room, our patient required 30mg of piritramide within 60 minutes, 40 mg parecoxib, 2,5 g metamizole and 1 g paracetamol, all administered intravenously to promptly reduce his pain. In addition, pulseoxymetry in our recovery room revealed an oxygen saturation of only 90%, which was sufficiently treated with supplemental oxygen but led us keep the patient overnight.

Our patient had no signs of any activated metabolism (e.g. elevated liver enzymes) and no relevant precondition. Neither were there any hints for other causes of reduced gas exchange and pain (e.g. pulmonary thromboembolism).

This manuscript adheres to the applicable EQUATOR-guidelines and written informed consent was obtained from the patient for publication of this case report.

4. Discussion

We are the first to describe a patient who underwent general anesthesia shortly after an asymptomatic infection with the novel coronavirus.

The unusual high dosages of narcotics and analgesics were noticeable and could be explained by our own observation of requiring high doses of narcotics for sedating COVID-19-patients on ICU (Intensive Care Unit) and by our colleagues' similar findings [1-3]. Our case shows, that asymptomatic and previous infections with the novel coronavirus might have the same, yet unknown, effects on narcotic-metabolism as in the most affected patients. The intraoperative endtidal pCO₂, which was significantly elevated despite a marked hyperventilation, speaks for a generally increased metabolism in our patient. No signs of malignant hyperthermia were detected, the temperature was 36 degree Celsius.

The reduced arterial blood oxygenation in the recovery room might also be linked to our patient's previous infection with COVID-19 as well. As there were no signs of reduced gas exchange prior to surgery, mechanical ventilation during general anesthesia might have disclosed compensating mechanisms.

The here presented case demonstrates, that shortly after an asymptomatic infection with SARS-CoV-2, patients may still be in the need of higher doses of narcotics and volatile anesthetics. Further,

the gas exchange of these patients may be compromised after mechanical ventilation despite a normal gas exchange preoperatively. Consequently, the attending anesthesiologist should be aware of these circumstances and treat them accordingly by:

1. Enquiring about previous SARS-CoV-2-infection (in addition to routine testing using Polymerase Chain Reaction)
2. Carefully adjusting the anesthetic to the potentially higher individual patient's need
3. Closely monitoring postoperative gas exchange

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