

Learning From Others: A Case Report from the Anesthesia Incident Reporting System

Case 2020-09: A Diagnostic Dilemma

Case presentation: A 55-year-old ASA 1 man presented for lumbar laminectomy. He was asymptomatic and had not been tested for coronavirus. The general anesthesia and recovery were uneventful; therefore, the patient was discharged home. The patient returned on POD 3 with septic shock and was admitted to the ICU immediately. Due to his presenting symptoms, the patient was treated as a COVID patient under investigation (PUI). The patient deteriorated rapidly from respiratory, hemodynamic, and renal failure. The patient returned to the OR on POD #4 for an exploratory laparotomy. At this time, he was assessed as an ASA 5 with an arterial pH of 7.24. The patient was on a continuous bicarbonate infusion with multiple pressor agents running. The patient survived the resection of dead bowel but went into ventricular fibrillation during transfer to the ICU and could not be resuscitated. The coronavirus testing from the ICU was reported after the patient's demise and was negative.

This patient became very sick, very quickly, for no obvious reason. Judging from their submission, it seems the clinicians were concerned the patient was suffering from fulminant COVID-19. Although most patients who die from COVID-19 are older or have comorbidities, catastrophic deaths in younger and healthier patients have been reported in the popular press and scientific literature. The disease is new enough that most anesthesiologists outside of critical care practice may not have seen an active case. How then to assess the negative coronavirus test?

One possibility is that the ICU virus testing result was erroneous: the patient really did have COVID-19. The onset and symptoms would be consistent, as would the multi-system organ failure. The speed of progression would be unusual, but not impossible. Fulminant COVID-19 would raise the strong possibility that the initial surgery, while the patient was asymptomatic, provoked the crisis. An early report from China on "elective" surgery in asymptomatic coronavirus patients raised this possibility (*EClinicalMedicine* April 2020); a more recent international collaborative provided supporting information (*Lancet* May 2020). In both of these papers, the subsequent mortality of COVID-19 patients who had an elective surgery was around 20%. These papers are merely observations, of course, with no control for case mix or patient comorbidities. Even the physiology is not entirely

ASA is interested in collecting vaping-specific data to formulate recommendations for anesthesiologists taking care of these types of patients. The AIRS database is now capable of receiving data for this purpose. Please enter any available information at www.aqiairs.org.



clear: does a lumbar laminectomy produce enough systemic inflammatory disruption to aggravate asymptomatic COVID-19? Or was there something very unusual about this patient's genetics?

Under the COVID-19 view of this case, it seems the later management decisions were appropriate. It is implied that PUI precautions were in place during the ICU and second surgery, and it seems unlikely that anything could have been done differently once the patient returned to the hospital. Under this scenario, the biggest open question is whether the patient should have been tested prior to the initial elective surgery. Regardless of what caused the patient's demise, the answer to this is almost certainly, "Yes!" Routine preoperative testing of all surgical patients is widely recommended and has been adopted as a best practice by many large hospital systems. There are at least four reasons for this:

1. Safety of the clinicians who will care for the patients
2. Safety of other patients in the facility
3. Safety of the patient themselves, as above
4. Patient confidence in the hospital system: testing every patient is a marketable investment that encourages elective surgery

That this patient was not tested added considerable uncertainty to his subsequent care. There are many reasons why this

might have occurred, including production pressure, patient refusal, and shortage of testing resources. However, the most likely explanation is simple inertia: arranging a coronavirus PCR test in the 48 hours before surgery is a new step in scheduling that will require new knowledge (where to send the patient and what to tell them) and a new process for the surgeon's office. With time and practice – and negative feedback from cases like this one – this is one barrier that is likely to be eased over time.

If the patient did not have COVID-19, a different set of questions arise. First, why did a previously healthy patient deteriorate after an uneventful elective procedure? There is no obvious connection between the lumbar laminectomy, the presentation in septic shock, and the dead bowel found at surgery. Unrecognized bowel perforation might have occurred, but the patient's deterioration would be considered unusually rapid. Infarction of the superior

mesenteric artery could explain the rapid demise, but this would be a very rare complication indeed. Another infectious source is a possibility, with rapid deterioration due to gram-positive septicemia, or something unusual like typhoid fever; however, there is no evidence in the presentation to support this.

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A different question to consider is whether concern over COVID-19 adversely affected the patient's care. Physically, increased PPE and isolation requirements impose a drag on every aspect of routine patient care, which could conceivably make a difference in a rapidly evolving clinical crisis. Would more rapid diagnosis and treatment of an acute abdomen have made a difference? Also important is the intellectual drag: did concern with COVID-19 slow consideration of other diagnostic possibilities? This might represent a form of object fixation by the treating physicians (*J Hosp Med* May 2020). Future mitigation strategies might incorporate mandatory consideration of multiple options when dealing with sepsis of unknown origin, including consultation against an external list of possible causes to be considered and ruled out.

The reality is that not every patient death can be explained. But the new reality in the COVID-19 era is that we have one more thing to think about – or avoid thinking about – in addressing critically ill patients. ■

Review of unusual patient care experiences is a cornerstone of medical education. Each month, the AQI-AIRS Steering Committee abstracts a patient history submitted to the Anesthesia Incident Reporting System (AIRS) and authors a discussion of the safety and human factors challenges involved. Real life case histories often include multiple clinical decisions, only some of which can be discussed in the space available. Absence of commentary should not be construed as agreement with the clinical decisions described. Report incidents or download the AIRS mobile app at www.aqiairs.org.