Problem Based Learning Discussion: The Anesthetic Implications of Abdominal Sepsis in Rural Haiti: A Case Study in Social Justice

Moderator

John C. Welch, CRNA, MSN
Senior Nurse Anesthetist, Boston Children's Hospital
Associate In Anaesthesia, Harvard Medical School
Chief Clinical Officer for Ebola Response, Partners In Health
Perioperative Services Coordinator, Partners In Health

Faculty Advisor

Craig D. McClain, MD, MPH
Senior Associate in Perioperative Anesthesia
Boston Children's Hospital
Director of Global Pediatric Anesthesiology Fellowship
Assistant Professor of Anaesthesia
Harvard Medical School

Objectives

1. Discuss the accompaniment model for expatriate anesthesia providers working abroad.
2. Highlight the ethical considerations when practicing anesthesia in impoverished countries for elective, urgent, and emergency cases.
3. Describe unique methods of managing a patient with a septic abdomen in a resource poor setting.

Case Introduction

In the rural Central Plateau department of Haiti, Partners In Health has opened a 300-bed hospital with 6 operating rooms, preoperative and post-anesthesia nursing units, and limited but expanding critical care services. The region is littered with other private clinics that provide intermittent, albeit valuable, services to Haitians who have virtually no access to the impoverished country's hospitals.

You are the expatriate anesthesia provider working in the hospital over the last 6 months providing administrative, practice, and education mentorship to the perioperative and anesthesia staff, including 6 Haitian nurse anesthetists. One Friday afternoon, a national nurse anesthetist consults you regarding a patient who was transferred via private vehicle from a small clinic 90 minutes away.

The patient, accompanied by his older sister, is a 20-year-old semi-conscious male. He presented to the clinic one day before his transfer to your hospital after hearing there was an American surgeon working at the clinic. Details about his history are scant, though his sister states he had a "large, painful lump" in his left groin that was removed by the *doktè** at the clinic. She states they initially told her he would go home the same day as the procedure, but he had terrible pain afterwards and that he continued to vomit, even after the procedure. He was kept overnight for observation. The *blan** at the clinic are returning to the U.S. today, so the decision was made to transfer the patient. He arrives without any clinical documentation.

**Doktè* is Haitian Creole for doctor; *blan* means non-Haitian.

Discussion Point

What other information might you encourage your Haitian counterpart to seek? What are your concerns about the patient's management prior to his transfer? What are your thoughts about the communication between the clinic and your hospital? How might you approach the sending team in seeking more information regarding the transfer?

Preoperative Clinical Picture

The patient is critically ill, responding only to deep painful stimuli. He is persistently tachycardic (HR 120's) despite three liters of crystalloid, and is now mildly hypotensive (95/70). His extremities are cool to his wrists and ankles with prolonged capillary refill time. His peripheral pulses are palpable but weak when compared centrally. The patient is tachypneic (RR 30's) with clear bilateral breath sounds. Oxygen saturation in simple mask oxygen at 6 lpm is 97%. Urine output is negligible via a Foley catheter. A nasogastric tube has immediate return of a large volume of dark, foul, bilious-stained liquid. The abdomen is tense, tympanic, and tender (despite the patient's reduced responsiveness). An inflamed 4 cm incision is noted in the left inguinal region.

A bedside ultrasound reveals free fluid. A portable chest radiograph in semi-Fowler's position reveals free air below the diaphragm, with dilated loops of bowel. A CBC and chemistry panel are drawn and sent. A point of care arterial blood gas reveals pH 7.29, PaCO2 32, PaO2 97, HCO3 26, Base Excess -7.6, Lactate 4.

The surgeon, insisting that a dopamine infusion be commenced immediately, would like to urgently take the patient to the OR for an exploratory laparotomy.

Discussion Point

How would you guide the Haitian anesthesia staff in creating an anesthetic plan? What preparations might you ask the operating room staff to make? How would your plan vary between Haiti and your home institution? What postoperative plan should the team prepare? How might you manage differing opinions between national staff and yourself in hemodynamic management as a guest clinician in this scenario?

Intraoperative Course

Induction proceeds uneventfully with fentanyl, ketamine, succinylcholine, and the patient is easily intubated. You guide the national nurse anesthetist in placing an internal jugular central venous line with ultrasound guidance concurrently as the team preps and drapes. Fluid volume resuscitation is ongoing and the first central venous pressure is 4 mmHg. You demonstrate the placement of a radial peripheral arterial line, which corresponds accurately with the non-invasive blood pressure. The national nurse anesthetists wish to give ephedrine boluses for downward trending blood pressures, and the patient poorly tolerates any concentration of volatile anesthesia. You assist the national staff in titrating the dopamine infusion and commencing a phenylephrine infusion along with phenylephrine boluses—each has good effect. The surgeon finds the peritoneum filled with intestinal contents and a large defect in the small bowel as well as a 10 cm portion of necrotic bowel. The patient is further decompensating, now with overt coagulopathy and worsening hemodynamic instability. The necrotic intestine is excised and over-sewn; the abdomen is subsequently closed.

There is not capacity for prolonged post-operative ventilation. Muscle relaxation is reversed and the patient is breathing spontaneously with adequate tidal volume, oxygen saturations of 95% in 50% FiO2, so the trachea is extubated. Morphine is titrated carefully and the patient is urgently transported to the recovery ward with central venous line, peripheral intravenous lines, arterial line, nasogastric tube, and indwelling urinary catheter in situ. He remains critically unstable.

Discussion Point

How would you have managed this portion of the case? What are your concerns regarding the postoperative level of care for this patient? Are there ethical alternatives to surgical management of abdominal sepsis in resource limit settings? In an impoverished country like Haiti, what would preclude you from taking this patient to the operating room?

Clinical Progression

Over the course of the night, the patient has reduced urine output and continues to be hemodynamically unstable. His lactates are rising and his respiratory status is waning. You assist the PACU nursing staff with commencing the patient on Bi-PAP for signs of ARDS. The surgeon is concerned for abdominal compartment syndrome and decides to open the abdomen and place a VAC device. You are concerned about moving the unstable patient to the operating room and the surgeon agrees to a limited intervention at the bedside. The night duty nurse anesthetist has never anesthetized a patient outside of the operating room.

Discussion Point

Do you agree with the surgeon's diagnosis? How would you proceed in your home institution? What do you suggest in this setting? What other information might guide your clinical and ethical decision making in this situation? How would you accompany a national nurse anesthetist in providing anesthesia and critical care outside of the operating room?

Clinical Progression

The surgeon is able to quickly and effectively reduce the abdominal compartment syndrome with overall good effect. Over the next several hours, inotropes are reduced and Bi-PAP is weaned slightly. Urine output increases and the overall clinical picture improves.

Discussion Point

What concerns should the national nurse anesthetist have about a patient with an open abdomen breathing spontaneously? For what clinical course should you prepare the national staff? What is the ethical endpoint in this scenario? Does this ethical endpoint vary depending on geography (that is, the GDP of the country in which you are working)?

Case Discussion

This is an exceedingly complex case even in the most advanced settings. Abdominal sepsis offers a platform to debate many subjects: the use of etomidate for induction, the right inotropes for the right diagnosis, the proper amount of volume resuscitation and the efficacy of various fluids (colloid versus crystalloid, Ringer's versus saline), non-invasive ventilation or intubation, the essential vascular access for an emergent laparotomy, when to go to the O.R. and when to say no… we have all read the literature and have engaged in fruitful academic debate. The more difficult questions, however, lie in the ethical debate around a well-meaning surgeon's actions and the outcomes of his errors within the context of an impoverished country.

Surgery and anesthesia have long been considered impractical—that is, lacking 'cost effectiveness'—in poor countries, save for intermittent specialized surgical mission trips. However, various economic impact studies have proven the cost effectiveness of surgery in terms of lives saved and disability averted. Moral obligation also begs for preferential surgical options in the poor world. The World Health Organization (WHO) estimates there are over 234 million surgical procedures completed each year; though, only 30% of the world's population receives 75% of these operations. Close to 2 billion people are without access to safe surgery and anesthesia (Meara, 2015). What is more alarming, mortality rates for patients undergoing anesthesia in poor countries is anywhere from 100 to 1000 times those in the U.S.—in Sub-Saharan Africa, 1 in 150 patients die from anesthesia-related complications (WHO); most of these anesthetics are administered by a technician or non-anesthetist nurse. Indeed, in Haiti, where the population is estimated over 10 million people, there are fewer than 50 physicians practicing in anesthesiology. Clearly anesthesia remains an underdeveloped specialty in the "developing" world; though, these facts cannot drive us towards rendering negligent

care. “Doing” surgery is no longer enough; we must hold ourselves to the highest standards and provide a preferential healthcare option for surgical patients wherever we find ourselves.

It is convenient, when discussing cases as described here, to look toward a shortsighted view, believing the first surgeon did all he could. Clearly, there was more to be done—resource limitation can no longer be an excuse for a botched surgery. History’s long view, therefore, tells a story of a long-marginalized people (most Haitians, along with other impoverished populations, are uninsured and are forced to pay up-front for care). Where resources truly are limited, it is our responsibility as well trained, well remunerated, resource rich providers to shine a light on the injustices of health inequity. The poor bear the largest burden of disease but live without access to care—only 5-10% of the population is covered for catastrophic illness, like abdominal sepsis (Farmer, 2015). The poor are not every bit as deserving of the high-level care we can access in the U.S., they are *more* deserving (Farmer, 2005).

In global health, we must end our “either/or” argument around prevention and improved living conditions versus treatment—including surgery. We cannot pit infectious disease against surgical disease in places where they ravage families and livelihoods in equal proportions and without discrimination (I have seen an eclamptic woman arrive to the hospital with an open femur fracture, having fallen from a motorcycle on her way to the hospital for her eclampsia). The solution requires a historical long view and a shifting paradigm in the way we care for the world’s poor. The first step is to end the practice of unchecked medical mission work in places without the systems to monitor it—the surgeon, when confronted, later admitted that he was not in Haiti to do surgery, per se, but that he had to do *something* to help the boy. He was not registered in any capacity to practice medicine with Haiti’s health ministry, and never had been in the last 10 years he was visiting Haiti.

As Dr. Paul Farmer describes:

> The kind of care that ‘we’ receive isn’t ‘affordable’ or ‘sustainable’ for ‘them’ – the poorer inhabitants of indebted countries under pressure to shrink their public budget and healthcare payroll. Across sub-Saharan Africa, with a few notable exceptions such as Rwanda, hospitals are either private, expensive and out of reach of the destitute sick, or publicly financed, underequipped, understaffed and frequently avoided by the destitute sick, who know that the quality of care is dismal. They are often huge drains on the scant budgets of health ministries and offer little ‘value for money’. They are, in the words of experts in public health and development, ‘unsustainable’. (2015)

Death by inguinal hernia is certainly not an axiom in our country, nor should it be anywhere in the world. Indeed, death by hernia is, itself, unsustainable. Our socialization for scarcity is no longer founded. Those who have dedicated themselves to the care of their fellow human must first acknowledge, in cases such as this as well as within their daily practice, an ambivalence to the destitute poor whether in rich countries or poor, and take right action to avoid senseless death by negligence or ego, lack of imagination, or perceived resource limitation.

Suggested Reading

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