Intraoperative cardiac arrest during posterior spinal fusion – a case report and serial review of 4 cases

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Background

Unexpected cardiac arrest during spinal surgery in the prone position is a devastating intraoperative event with unclear etiologies.

Case report

The present case regards a 61-year-old male who underwent a lumbar spine revision operation due to recurrent back pain. The patient's history was unremarkable save for a previous stroke that lead to left hemiparesis. General anesthesia induction and maintenance were uneventful. The patient developed an abrupt drop in blood pressure and end-tidal CO₂ levels during the later stages of subcutaneous suturing after implantation of fusion instrument, and electrocardiogram showed pulseless electrical activity shortly after. CPR was started on the patient after he was immediately put in a supine position. The patient regained spontaneous circulation after a brief cardiac massage and intravenous epinephrine. A transesophageal echocardiography was performed and blood samples were analyzed. The patient's ventricular performance was normal with no signs of wall motion defects or right heart failure. Serial levels of cardiac enzymes, D-dimer and tryptase (up to 12 hours after the event) were all within normal ranges. The patient recovered full consciousness and was extubated in the operating room, but

required a low infusion dose of epinephrine during the transfer to the intensive care unit. The patient was discharged from the hospital 8 days later.

Discussion

Four similar cases where patients received elective posterior spinal surgery were reviewed from our clinical database (2012-2017). Analysis of the five patients showed: the majority of patients were female (3/5), the mean age was relatively high (70 years), there were moderate levels of comorbidities (ASA PS IIIII), and no records of massive intraoperative blood loss. Postoperative cardiac examinations were performed, but no patients were diagnosed with newly developed myocardial injury. Differential diagnoses included pulmonary embolism, hypovolemic shock, and anaphylaxis were excluded in most of these patients.

Learning points

Cardiac arrest can happen with no apparent warning signs during lumbar spine surgery in the prone position. Although cases of intraoperative cardiac arrest during spine surgery have been repeatedly reported in the literature, the underling pathology remains unclear. Other potential causes such as neurologic shock, acute adrenal insufficiency, or transient air embolism should be taken into consideration.