Anesthetic Management of Severe Pericardial Effusion in a Toddler with Pierre Robin Sequence and Demonstrated Difficult Airway

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We present the case of an 18 month old 11kg male who presented with severe symptomatic pericardial effusion three weeks after a surgical repair of atrial septal defect and PDA ligation. Past medical history was significant for Pierre Robin Sequence, hypothyroidism, and dysphagia. During the previous surgery, the patient was noted to have a difficult airway with intubation being accomplished blindly using direct laryngoscopy a MAC #2 blade after failed attempts at intubation with both fiberoptic and video laryngoscopy.

A detailed plan for anesthetic induction and intubation was made and all standard difficult airway equipment was immediately available. The initial plan for airway management was to attempt direct laryngoscopy with a MAC #2 based on previous experience.

After placement of standard ASA monitors, anesthesia was induced with a combination of mask induction using sevoflurane and IV ketamine titrated for adequate depth with spontaneous ventilation. A right femoral arterial line was placed. Prior to attempting intubation, the patient was steriley prepped and draped, and a pediatric cardiac surgeon was ready to start surgery. Immediately on placement of the laryngoscope blade, arterial blood pressure line tracing was noted to change dramatically from a pressure of 90/30mmHg to non-measurable values. Blood pressure stabilized with two doses of five micrograms epinephrine, and the anesthetic was continued with mask assisted spontaneous ventilation. Pericardial window was expeditiously performed, and 480mL of blood was drained from the pericardial sac in a patient with an estimated blood volume of 880ml. A left sided chest tube was placed for drainage of pleural effusions. The patient remained hemodynamically stable and was transferred to the pediatric intensive care unit spontaneously breathing.

Induction and maintenance of anesthesia in a patient with severe pericardial effusions needs to be meticulously planned. Standard practice includes pre-induction placement of arterial blood pressure line and, when possible, maintenance of spontaneous ventilation throughout induction. Typically, intubation is performed immediately prior to the start of surgery in case tamponade physiology presents during ET tube placement. A child presenting with a known difficult airway makes the anesthetic even more challenging. Even with detailed planning and preparation for anticipated complications, the anesthesia team needs to be prepared for sudden and expeditious changes from the original plan.

References: