Anesthetic Management in Pediatric Superior Vena Cava Syndrome
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Introduction:
• Superior Vena Cava Syndrome: Obstruction SVC → Right Atrium
  • Pathology:
    • Mediastinal Masses
    • Malignancy
    • Artificial Venous Access Devices
    • Thrombus Formation
    • SVC Stenosis
  • Signs/Symptoms
    • Upper Extremity and Facial Edema
    • Cough/Dyspnea
    • Airway Obstruction → Cardiopulmonary Arrest
    • CNS: Blurred Vision, Lethargy

Case:
We describe the case of a 2 year-old female with history of congenital nephrotic syndrome, on chronic albumin transfusions. Three days prior to presentation she had a 7 French right internal jugular (IJ) line placed. One day after the IJ placement she presented with swelling of the head, neck and upper extremities. A diagnosis of SVCS was suspected and an MRI/MRV with general anesthesia (GA) was requested.

She was pretreated with glycopyrrolate and standard ASA monitors were placed. An in-situ 22g right hand IV was used for induction with ketamine. Spontaneous respiration was continued. A grade I view was obtained with a Mac 2 blade and a 3.5 cuffed tube passed with no leak at 30mmHg with no air in the cuff. Vital signs were stable throughout the intubation period.

The MRI was did not display the source of the occlusion. The patient was taken to the PICU intubated for airway protection. The following day an angiography displayed an SVC stenosis due to clot from a prior line. The MRI was not able to display the source of the occlusion. The patients current line was downsized and her stenosis was balloon dilated to allow for better drainage through the SVC. Dilatation is a short-term fix, stenting and in more severe cases surgery, are more long-term options for treatment. The patient remained intubated in the PICU for 4 days to allow for swelling to decrease and the return of an air leak around her ET tube prior to an uneventful extubation.

Discussion:
Anesthetic Issues to Consider:
I. Difficult Airway
  • Reduce Edema/Obstruction
  • Upright Position
  • Maintain Spontaneous Respiration
  • Minimize Sedation
  • Fiber Optic Intubation
  • Surgical Airway
  • Back up Cardiopulmonary Bypass

II. IV Access
  • Complete vs. Partial SVC Stenosis
  • Lower Extremity vs. Upper Extremity Access
  • Prolonged Circulation time
  • Medication Over Dosage

III. Fluid Management
  • Minimal fluid
  • Prevent edema/pulmonary congestion

V. Post Anesthetic Monitoring
  • Extubation??
  • PICU

V. Management of SVC Stenosis:
  • Temporary/Palliative
    • Removal of Central Access
    • Dilatation
  • Long Term Treatment
    • Dilation and Stent
    • Surgical Correction

References: