Introduction

Patients with mediastinal masses can experience compression of major airways and they require careful evaluation before undergoing anesthesia. Even large mediastinal masses without any clinical symptoms of airway compromise can suddenly develop life-threatening airway compression. Therefore, airway management in patients with mediastinal masses with or without evidence of any airway obstruction poses a difficult challenge to Anesthesiologists. We present a case report of a patient with a tracheal mass from an unrecognized ruptured pseudoaneurysm of the lingual artery, leading to massive hematoma formation, tracheal deviation, and airway obstruction eventually leading to hypoxic cardiac arrest.

Case Presentation

A 14 year old male with no PMhx presented to the ED for swelling and pain in the left upper neck. Two weeks ago patient had a “flu like symptoms” which resolved without any interventions. There was no history of trauma to neck. CT scan of neck revealed 4.1x3.9x11.2cm mass with rightward shift of trachea. Patient showed no signs of respiratory distress, and was admitted for mass workup to r/o infectious vs. malignancy vs. congenital etiology.

The next day anesthesia team responded to a cardiac arrest code. Upon arrival, patient was found hand ventilated with an ambu bag, saturating in 60’s, epinephrine was given, with ROSC. An oral airway was placed and saturation reached high 90’s. Due to an existing tracheal mass, video laryngoscopy was attempted. However there was an overwhelming amount of bloody secretions, and we could not visualize the anatomy, and decision was made to abort, place a LMA and take the patient to the OR for an emergency tracheostomy.

Upon arrival to the OR, saturation was in 40’s. LMA was removed as we were unable to achieve adequate ventilation with it by this time. Patient was then hand ventilated, with an oral airway in place, while ENT performed an emergent tracheostomy. A 6.0ID cuffed ETT was placed. However no etco2 was noted. ENT believed they had entered a false lumen as there was massive amounts of blood coming through the oropharynx and tracheostomy site. At this point oxygen saturation was still in 50’s and patient became bradycardic and went into asystole. ACLS protocol was initiated and epinephrine x 4 doses were given, along with sodium bicarbonate and calcium. ENT finally secured the tracheostomy and achieved hemostasis. Pink frothy secretions were seen coming through the ETT as patient went into flush pulmonary edema. Central line and Arterial line were placed. ABG showed profound mixed acidosis. Lasix, FFP, and platelets were given and an epinephrine drip was started. Patient was stabilized and transferred to PICU for further care. Resolution of pulmonary edema was noted next day. IR guided angiogram of ICA revealed pseudoaneurysm of the left lingual artery which was embolized with placement of a coil. Follow-up CT read the mass as a “lytic lesion in the body of the hyoid bone consistent with a primary bone tumors such as aneurysmal bone cyst osteoma or fibrous dysplasia”. Final pathology results returned as a “benign vascular malformation of the neck with secondary aneurysmal bone cyst of the hyoid bone”. Patient recovered neurologically and was eventually discharged home with rehabilitation follow up and the tracheostomy site was de-cannulated three months later.

Discussion

During the intraoperative period, our working diagnosis was post-obstructive pulmonary edema and mixed metabolic/respiratory acidosis from profound hypoxemia. We corrected the acidosis and ventilated with low tidal volumes and high PEEP. We attempted to transfer the patient to another facility for initiation of ECMO as we did not have pediatric ECMO at our facility. However patient was initially too unstable for transfer.

In hindsight, even though patient did not have any evidence of airway obstruction, we should have electively brought the patient to the OR to effectively secure an airway. Spontaneous ventilation is preferred during induction of anesthesia. We believe spontaneous rupture of the aneurysm of the lingual artery caused massive hematoma, which lead to obstruction, airway compromise, hypoxemia, and subsequent cardiac arrest and acute pulmonary edema.

Literature search shows aneurysmal bone cysts occurring in the hyoid bone to be extremely rare with only one prior case report. It is typically limited to long bones and commonly occurs in the first two decades of life. Proposed etiologies include a benign neoplasm or a reactive cage, cutaneous, intraläsionale injection of sclerosing agents, or arterial embolization.

Conclusion

Airway obstruction is the most common and feared complication in patients with a tracheal mass. These symptomatic as well as asymptomatic patients can develop fatal airway compromise. Therefore, patients at risk of airway obstruction should be identified by presence of respiratory symptoms and radiological evaluation. Those patients at a high risk should be electively intubated inside the OR even without any immediate apparent airway compromise. Difficult airway cart and ENT should be on standby for any contingencies.

References