Clinical Image

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Tracheo-Bronchial Compression by Massively Dilated Pulmonary Artery- a Rare Cause of Weaning Failure

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Abstract

Weaning failure is associated with a significant increase in morbidity and mortality among ICU (Intensive Care Unit) patients.

Keywords: Weaning failure, pulmonary artery, Intensive Care Unit, atrial septal defect, pulmonary arterial hypertension.

Abbreviations: ICU: Intensive Care Unit; ASD: atrial septal defect; PAH: pulmonary arterial hypertension; COPD: chronic obstructive pulmonary disease; LMCA: left main coronary artery; LRLN: left recurrent laryngeal nerve.

Clinical Image

Weaning failure is associated with a significant increase in morbidity and mortality among ICU (Intensive Care Unit) patients. Tracheobronchomalacia secondary to a massively dilated pulmonary artery is a very rare entity that can lead to weaning failure in such patients. A 65-year-old woman was admitted to the ICU with septic shock requiring vasopressors and invasive mechanical ventilation in the postoperative period following laparotomy and adhesiolysis for intestinal obstruction. She had a known diagnosis of metastatic invasive ductal carcinoma of the left breast and was receiving chemotherapy. Her past medical history included a successfully closed ASD (atrial septal defect) with an intact patch and no residual defect, as well as severe PAH (pulmonary arterial hypertension) with a PASP of 70 mmHg, for which she was on pulmonary vasodilators. She was also a known case of COPD (chronic obstructive pulmonary disease) on regular bronchodilator therapy, with no recent exacerbations.

Following successful management of sepsis, the patient developed weaning failure and required re-intubation two hours after an attempted extubation. Review of her prior PET-CT scans, performed for disease progression assessment, revealed a massively dilated pulmonary artery causing compression of the trachea as well as the left and right main bronchi (Figure a-1c). These findings were confirmed on bronchoscopy (Figure 2).

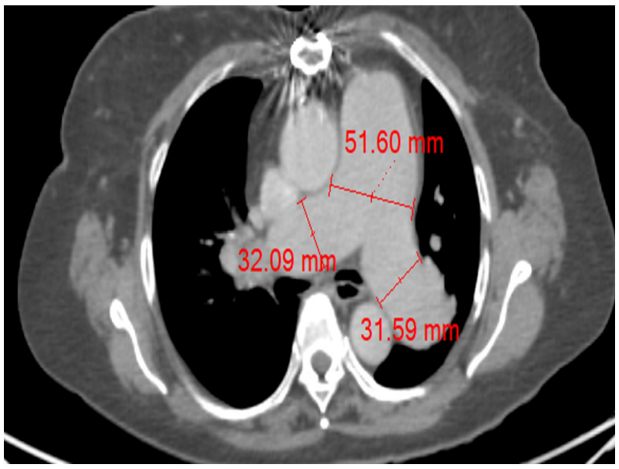

Figure 1a: *Massively dilated Main Pulmonary artery(51.6mm),Left Pulmonary artery(31.59mm) and Right Pulmonary artery(32.09mm). Normal cutoff - main pulmonary artery 27mm, Left pulmonary artery 21mm and right pulmonary artery 19mm².*

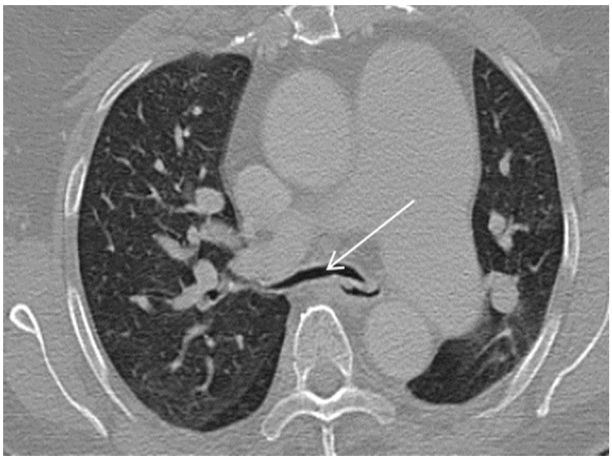

Figure 1b: *Severe tracheomalacia(arrow), lung parenchyma showing emphysematous changes.*

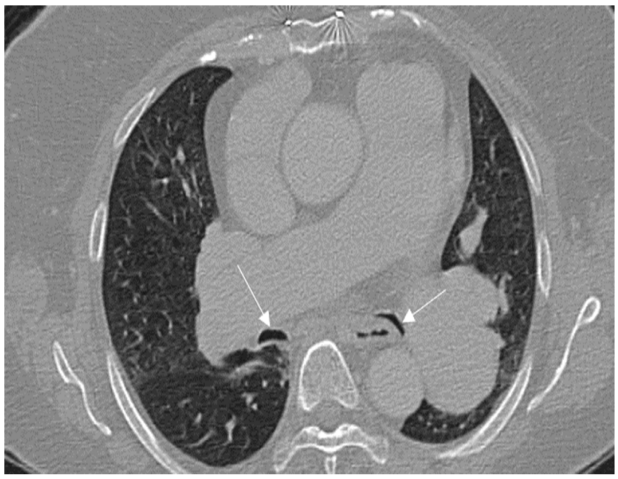

Figure 1c: *Severe right and left bronchomalacia(arrows), lung parenchyma showing emphysematous changes.*

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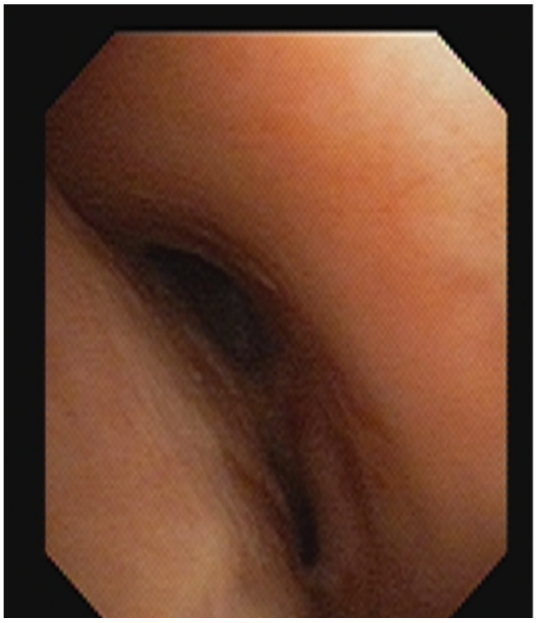

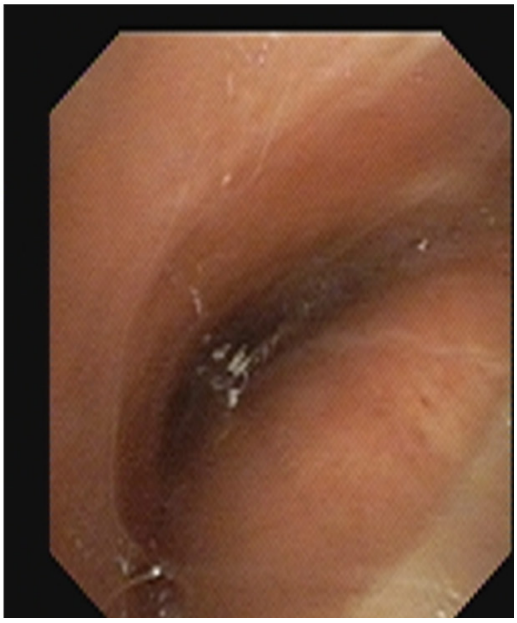

Figure 2: *Bronchoscopy images showing severe trachea-bronchomalacia.*

The patient was subsequently extubated to non-invasive ventilation (NIV) and was offered palliative care in view of her multiple comorbid conditions. Pulmonary arterial dilatation is increasingly recognized in patients with PAH. The enlarged pulmonary artery may compress adjacent structures such as the left main coronary artery (LMCA), left recurrent laryngeal nerve (LRLN), and less commonly, the tracheobronchial tree. In this case, the patient did not report chest pain or hoarseness of voice, nor were there any ECG changes observed during the weaning period.

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