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Case Report

Unusual presentation of Pneumothorax during Thoracotomy

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ABSTRACT

38-year-old patient developed pneumothorax intraoperatively. He was managed successfully after the diagnosis and discharged in a satisfactory condition.

Case Report

38 year-old male patient presented with chest pain and cough for three months. He was diagnosed with left sided collapse of lung due to repeated infection and fibrosis. There was no previous history of fever or tuberculosis. His blood investigations were all within normal limits. Chest x ray showed state of lung collapse on left side. Right side was normal. On auscultation, left side breath sounds were not appreciated. Right side chest had normal vesicular breath sounds. Patient was prepared for decortication. Proper chest physiotherapy, bronchodilators and nebulization were given preoperatively. Preoperative pO2 was 77% and pCO2 was 45 mm of Hg without oxygen. Patient was anaesthetized and intubated with a right sided double lumen tube. Radial arterial cannula, IJV on left side and epidural cannula were inserted for the patient. He was operated on the left sided position. After one hour his saturation started falling from 100% to 70% then 60% . Both lungs were ventilated with 100% oxygen and 1% sevoflurane in view of low oxygen saturation. Endotracheal suction on both sides were done but there was no improvement in oxygen saturation. Haemodynamically patient was stable and chest

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auscultation on right side breath sounds were mildly decreased. After one hour , he was put in supine position and double lumen tube was removed after suctioning. Tube was completely blocked with blood clot. Single endotracheal tube number 7.5 cuffed, was inserted and patient was ventilated with 100% oxygen. On auscultation, right side again had decreased breath sounds but no adventitious sounds. On left side, there was air leak and breath sound was present but decreased. ABG showed pH 7.2, pO2 50mm Hg, pCO2 55mm Hg, base excess -9. So, 75ml soda bicarbonate was given and patient was hyperventilated with 100% Oxygen. No improvement in saturation was seen. Oxygen saturation dropped to 50%. Heart rate and blood pressure were normal. Immediately a chest X ray was done and it showed pneumothorax on the right side which was the normal lung. Chest tube was inserted immediately and oxygen saturation became 100%. He was shifted to cardiothoracic unit recovery and ventilated for four hours with fentanyl infusion and injection atracurium. He was extubated successfully after four hours and was given 4 litres of oxygen via mask. He was discharged in a satisfactory condition.

Discussion

Pneumothorax is abnormal collection of air or gases in pleural space separating lung from chest wall and interfering with normal breathing. This can be caused by either trauma to chest or intraoperatively during surgical intervention (3). Other causes are air leak from pre-existing bullae, pneumoperitoneum for laproscopic surgeries, puncture during central venous cannula insertion or barotrauma due to positive pressure ventilation. Diffuse dissection of pleura has also been seen in some cases. That can be due to subpleural cysts as a complication of pulmonary barotrauma during cardiopulmonary resuscitation treatment or mechanical ventilation for acute respiratory distress syndrome (4). Intraoperative pneumothorax is a potentially lethal complication and a very critical situation during general anaesthesia. It can easily progress to tension pneumothorax due to positive pressure ventilation unless appropriate treatment such as inserting drainage tube in the thoracic cavity is done (4). Unrecognised tension pneumothorax can have catastrophic consequences and effects. A tension pneumothorax needs to be considered in any patient who develops high peak inspiratory pressure during one lung ventilation with open chest even when the classic signs of hypoxia and hypotension are absent (5). Risk of intraoperative pneumothorax is increased in patients with history of lung diseases (emphysematous bullae), barotrauma and laproscopic surgeries (1). Massive air leak through a lacerated lung leads to less or inadequate ventilation leading to hypoxia, which further leads to hypoxemia and ultimately, leading to, ventilation perfusion mismatch (V-Q mismatch). If it is left unrecognised and undiagnosed, it compromises with haemodynamic function (2). In awake patients,

chest pain and breathlessness are typical symptoms (3). Intraoperatively, in an intubated patient, low oxygen saturation and tachycardia all of a sudden are the signs suggesting pneumothorax. Respiratory changes include reduced lung compliance and increased pressure of airway along with raised end tidal CO2 (3). Clinically, diagnosis can be made by chest auscultation but, it can be challenging because of limited access to patient's chest during surgery (2). For confirmation, chest x-ray can be done later. Halting the surgery immediately and manually ventilating the patient with 100% oxygen should be done as the first thing. In our patient there was no hypotension or tachycardia. Normal lung also had air entry but reduced. Since the IJV was on the right side a small puncture must have led to pneumothorax. So, it is important to do an X ray for patients who develop hypoxia and manage accordingly.

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