

‘Acute Respiratory Distress Syndrome (ARDS) Complicated By Bilateral Pneumothoraces In A Primigravida’

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Abstract: Acute respiratory distress syndrome (ARDS) occurs as a complication during the treatment of several diseases and interventional procedures. To handle such situation is very difficult and special care must be applied to the patients. Mechanical ventilation is used for these patients and several parameters are changed constantly to achieve better compliance. However, during the application of positive airway pressure a complication observed is pneumothorax.

Sir,

A 22year old XYZ, primigravida was admitted with history of amenorrhoea in obstetrics ward and was taken transfer to medicine intensive care unit in view of Fever since 3days, Cough since 3days and Breathlessness since 3days.

On examination patient was tachycardic, tachypnic, pulse oximeter showed decreased oxygen saturation (56% on 10litre/min oxygen by mask) and bilateral crepitations were heard all over chest. Investigation revealed, Arterial Blood Gas analysis: $PaO_2/FiO_2 < 200$ mmHg, Chest Xray showed bilateral diffuse pulmonary infiltrates suggestive of acute respiratory distress syndrome (ARDS) (fig. 1). Other investigations like complete blood count, kidney function test, liver function test and ECG were within normal limits, tests for malaria and dengue were also negative.

Patient was put on mechanical ventilator and antibiotics were started. After 24hours patient again was tachycardic, tachypnic, hyperesonant note on percussion on left side and

air entry reduced on left side, repeat Chest Xray suggestive of bilateral pneumothorax with ARDS (fig.2). Immediate Inter-Costal Drain (ICD) placement was done on left side. After 2days of ICD repeat chest xray showed resolution of pneumothorax (fig.3). Gradually patient was weaned off and chest xray showed clearance. Patient was transferred back to obstetrics ward.

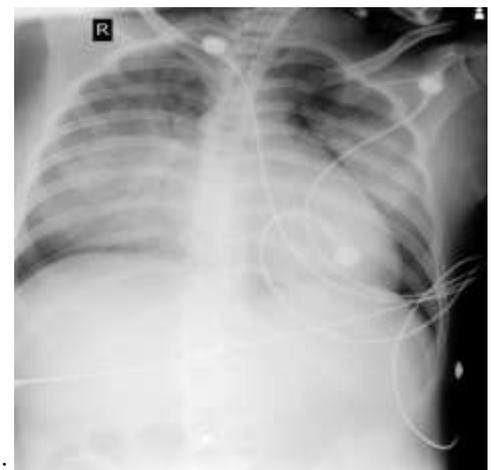


Fig. 1 :



Fig. 2:



Fig. 3:

Discussion:

ARDS is defined as a rapidly progressive acute onset respiratory failure (arterial hypoxemia with PO_2/FiO_2 ratio less than 200 mmHg regardless of PEEP level), with bilateral radiographic infiltrates, without evidence of left atrial hypertension (or pulmonary artery wedge pressure less than 18 mmHg) (1). The syndrome is characterized by broad clinical presentations, is caused by a variety of insults, such as bacterial or viral pneumonia, nonpulmonary sepsis, major trauma, amniotic fluid embolism, transfusions, aspiration of gastric contents, drug reactions etc and is associated with high 180 day mortality, approaching 31% in adult patients, according to the most recent report of the ARDS Network clinical trials (2). A potentially fatal complication in patients with ARDS who needs mechanical ventilation is pneumothorax. The precipitating factors of pneumothorax

in ARDS are the mechanical ventilation settings, the clinical severity of ARDS and the underlying pulmonary pathology (like preexisting emphysema). The incidence of pneumothorax seems to be related to the duration of ARDS, varying from 30% of all patients with early ARDS (up to 1 week) to 46% in intermediate ARDS (between 1 to 2 weeks) and complicating a total of 87% of patients with late ARDS (more than 2 weeks) (3). To minimize the morbidity and mortality prompt recognition and treatment of pneumothoraces is necessary. Small pneumothoraces in these patients can cause severe hemodynamic or pulmonary compromise hence pneumothorax must always be suspected in any patient with ARDS who experiences an acute worsening in respiratory function, accompanied with dyspnea and hypoxemia, which is usually unresponsive to oxygen therapy. Chest Xray is the first diagnostic evaluation and procedure of choice. A more specific modality if chest xray is not useful is chest computed tomography (CT). Limited literature exists on when or how to treat such patients (4). Treatment varies from simple observations in case of small spontaneous pneumothoraces without severe respiratory compromise to traditional tube thoracostomy or open thoracotomy with application of sclerosing agents. Thoracoscopic treatment is another technique commonly applied in cases of recurrences of persistent air leaks. Surgery is helpful in cases of bronchopleural fistula, persistent air leaks, bilateral pneumothorax and various manifestations of barotrauma due to mechanical ventilation. Lung protective techniques like high frequency ventilation, independent lung ventilation (ILV), partial liquid ventilation, surfactant replacement and extracorporeal membrane oxygenation (ECMO) systems contribute to lower barotrauma complications(5).

Summary: In a critically ill patient with ARDS pneumothorax can be a complication with tragic consequences so “lung protection” during mechanical ventilation support, awareness and prompt recognition of this complication could be lifesaving.

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