Septicemia Induced ARDS Mimicking Transfusion Related Acute Lung Injury

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ABSTRACT

Severe Sepsis may cause acute lung injury mimicking Transfusion Related Acute Lung Injury (TRALI)and may pose a diagnostic challenge to the pulmonologist and hematologist. We present a rare known case of Auto-immune hemolytic anaemia presented with ARDS secondary to septicemia resembling TRALI.

Keywords: Septicemia, ARDS, TRALI.

INTRODUCTION

Acute respiratory distress syndrome (ARDS), previously known as respiratory distress syndrome (RDS), adult respiratory distress syndrome, or shock lung, is a medical condition occuring in critically ill patients characterized by widespread inflammation in the lungs. ARDS is not a particular disease, rather it is a clinical phenotype which may be triggered by various pathologies such as trauma, pneumonia and sepsis. Sepsis induced ARDS may mimic ARDS secondary to other causes such as TRALI clinically. We present a rare known case of Auto-immune hemolytic anaemia presented with ARDS secondary to septicemia resembling TRALI.

CASE REPORT

A 65 years old female presented to the emergency medical department with shortness of breath. On examination, she was dyspneic, had pallor, pulse rate was 124/min and had tachycardia. She was a known case of AIHA since five years and had repeated blood transfusions at frequent intervals. She was admitted in emergency medical ward and treated symptomatically and all the routine investigations were ordered. Her laboratory details were tabulated in Table 1.

Table 1 showing routine laboratory parameters.

Hemoglobin	7.0 gm/dl
WBC	710 cells/cu.mm
Platelets	1.0 lakhs/cu.mm
Impression	Pancytopenia
Total bilirubin	0.8 mg/dl
Urea	40 mg/dl
Creatinine	1.1 mg/dl
Blood grouping	B Rh-D positive

As she was anaemic, four units of cross-match compatible packed cells were transfused two units on the second day and two units on third day of admission. She developed fever with chills on second day after four hours of transfusion. Symptomatic treatment was given for fever. She became severe breathless after 3 hours of last transfusion. She was put on ventilator support and chest X-ray was done at bedside which was showing bilateral lung infiltrates (Figure 1). As there was no raise of JVP, Transfusion Associated Cardiac Overload (TACO) was ruled. Blood bank medical officer was informed suspecting TRALI. Post-transfusion samples were sent to central lab and blood bank for investigations.

Figure 1-Chest X-ray showing bilateral lung infiltrates.

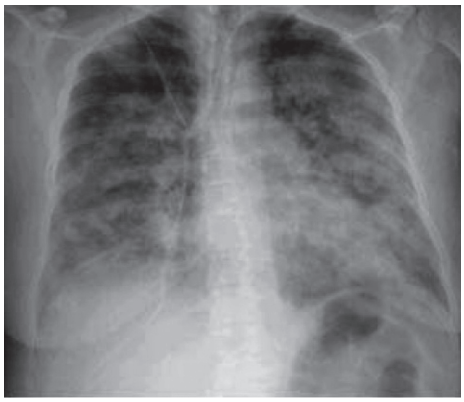


Figure 2 Showing Blood group - B Rh D Positive

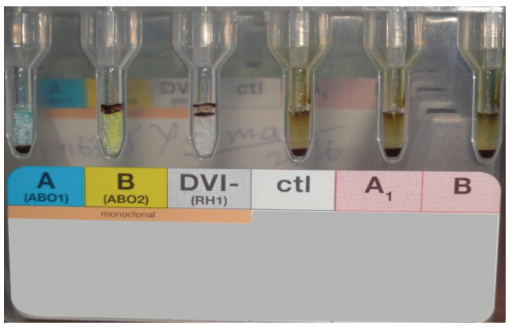
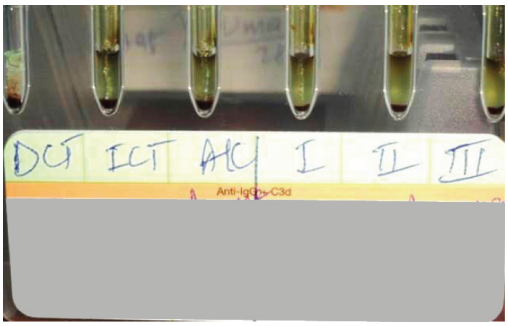


Figure 3- Coomb's Test (Direct, Indirect and autocontrol) and three cell panel. DCT was Tracely positive (known case of AHIA).



Laboratory investigations did not reveal any evidence of hemolysis. Regrouping of blood confirmed the blood group to be B Rh D Positive (Figure 2).Direct coomb's test was tracely positive, indirect Coomb's test, Auto-control and antibody screening with three cell panel were negative suggesting no immune mediated hemolysis. Two days later blood culture report revealed positive for coagulase negative staphylococci and was resistant to most antibiotics suggesting hospital acquired sepsis induced acute respiratory distress syndrome (ARDS). Antibiotic was changed while on ventilatory support and the patient responded well.

DISCUSSION

Acute respiratory distress syndrome (ARDS) and pneumonia are closely correlated in the critically ill patient. Whereas ARDS is often complicated by nosocomial pneumonia, pulmonary infection is also the most frequent single cause of ARDS[1]. Diagnostic criteria include acute onset, profound hypoxemia, bilateral pulmonary infiltrates, and the absence of left atrial hypertension[2]. Acute respiratory distress syndrome is believed to occur when a pulmonary or extrapulmonary insult causes the release of inflammatory mediators, promoting neutrophil accumulation in the microcirculation of the lung. Neutrophils damage the vascular endothelium and alveolar epithelium, leading to pulmonary edema, hyaline membrane formation, decreased lung compliance, and difficult air exchange. Most cases of acute respiratory distress syndrome are associated with pneumonia or sepsis[3]. The pathophysiology of pulmonary infiltrates in pneumonia is well defined, but the mechanisms behind the development of ARDS are still not fully understood. The hallmark of ARDS is the increased permeability of the edema, which is interpreted as being an accumulation of protein-rich edema fluid in the alveoli and is mediated by inflammation of various mechanisms[4].

TRALI is transfusion related acute lung injury due to immune mediated reactions between specific leucocyte antibodies and leucocyte antigens, resulting in pulmonary alveolar and capillary membrane damage[5]. It is a life threatening complication of transfusion indistinguishable from the secondary causes of ARDS or it's less severe form, acute lung injury[5].

TRALI and severe sepsis may cause ARDS which are indistinguishable some times. TRALI is a diagnosis of exclusion ie, blood culture should be sterile. As blood culture was positive in our case, we have ruled out the clinical diagnosis of TRALI.

CONCLUSION

Sepsis induced ARDS should be suspected when the patients in Acute care wards develop sudden severe breathlessness with fever so that appropriate treatment is started early.

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