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COMBINATION OF EXTRACORPOREAL MEMBRANE OXYGENATION AND CYTOKINE ADSORPTION THERAPY FOR ACUTE RESPIRATORY DISTRESS SYNDROME AND SEPTIC SHOCK DUE TO BILATERAL PNEUMONIA

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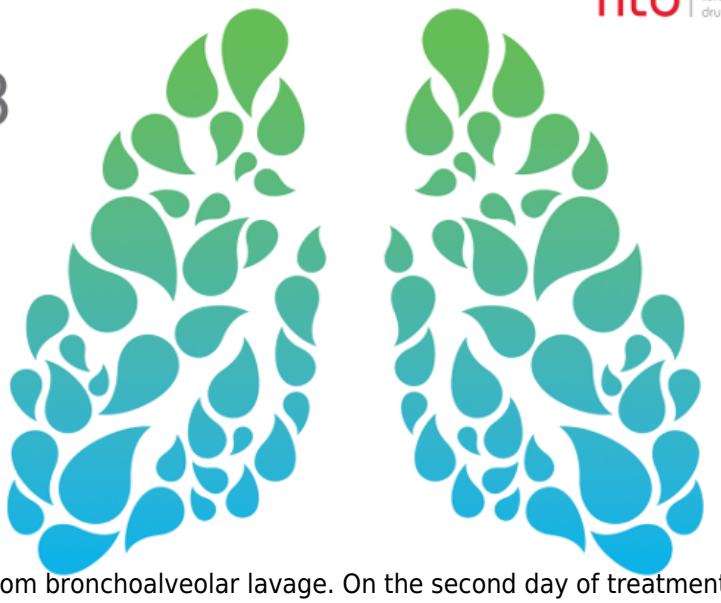
Objective: Septic shock in combination with severe acute respiratory failure represents a lifethreatening condition that is often refractory to the conventional methods of treatment. We describe the case of a successful treatment of acute respiratory distress syndrome (ARDS) and septic shock secondary to bilateral pneumonia using a combination of extracorporeal membrane oxygenation (ECMO) and cytokine adsorption therapy.
A 61-year-old lady was admitted to the hospital with symptoms of fever, cough and progressive shortness of breath for 5 days. She was in a state of severe respiratory distress with peripheral cyanosis, tachypnea (respiratory rate 32/min) and hypotension (blood pressure 50/30 mmHg). Arterial blood gas analysis (ABG) showed PaO2 31 mmHg, PaCO2 43 mmHg, pH 7.20 and SaO2 45%. Chest x-ray revealed infiltrates of the entire right lung, lower left lobe and lingula. Upon admission, invasive mechanical ventilation was initiated with positive end-expiratory pressure (PEEP) 10 cm of H2O, plateau pressure 28 cm of H2O and FiO2 of 0.8. Norepinephrine infusion was initiated to keep the mean arterial blood pressure above 60 mmHg. Broad-spectrum intravenous antibiotics (piperacillin-tazobactum, ciprofloxacin) were empirically started. Pneumococcus urine antigen was



positive and Pseudomonas aeruginosa isolated from bronchoalveolar lavage. On the second day of treatment, respiratory failure worsened: ABG showed (under previously mentioned ventilator settings) PaO2/FiO2 ratio 61, pH 7.31, PaCO2 66 mmHg. Chest x-ray and CT scan revealed bilateral diffuse lung infiltrates suggesting severe ARDS and newly developed apical left sided pneumothorax. Thoracic drainage was initiated but with no improvement in respiratory status. Murray score was 3.25. Considering the refractory hypoxia, veno-venous ECMO was instituted. Due to severe sepsis and need for high doses of vasopressors, a cytokine hemoadsorption column (CytosorbTM, Linc Medical, Leicestershire, United Kingdom) was added to the ECMO circuit. Ventilator support was then reduced to resting lung ventilation (PEEP 8 cm of H2O and pressure control 15 cm of H2O above PEEP). Oxygen blod saturation measured by pulse oximetry immediately improved to 98% with ECMO support and the hemodynamic parameters started to stabilize. Patient showed gradual improvement in oxygenation (improved PaO2/FiO2 ratio) and we were able to stop ECMO support on the eight day from initiation. She was gradually weaned off from the ventilator support the following day and extubated. Patient showed good recovery and was discharged from hospital in stable condition with no respiratory sequelae.