

ACUTE HEMORRHAGIC PNEUMONITIS FROM ILLEGAL ANICOLL INJECTION

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Learning Objectives: Several drugs that are not FDA approved in the US are used worldwide for cosmetic soft tissue augmentation. Young women often travel outside of the US to have procedures performed by non-medical lay practitioners and end up with fatal complications. We describe the case of hemorrhagic pneumonitis causing acute respiratory failure in a young healthy female due to Anicoll injection. **Methods:** A healthy 29-year-old woman was admitted with history of sudden onset of shortness of breath, cough productive of blood tinged sputum, chest pain, headache and altered mental status for 2 days. She was febrile and hypotensive. She was intubated, resuscitated and started on vasopressors, antimicrobials and hydrocortisone. Labs showed elevated WBC count, anemia and thrombocytopenia. Toxicology screen was negative. CT chest showed extensive infiltrates, predominantly in bilateral lower lobes and ground glass opacities within the middle and upper lobes. Bilateral breast implants were noted to be intact. CT pelvis showed dense infiltration within the subcutaneous fat of bilateral buttocks. Diagnostic bronchoscopy was suggestive of diffuse alveolar hemorrhage. Lumbar puncture was negative for infection. Upon obtaining further history from family, it was revealed that she had received injections in her gluteal region at a local beauty salon in Mexico 1 day prior to her symptoms. The salon in Mexico was contacted which revealed that she received Anicoll injection for gluteal enhancement. The composition of Anicoll was found to be polymethyl methacrylate (PMMA) microspheres suspended in purified collagen (30%) and silicone (70%). Extensive workup for infection and autoimmune conditions was negative. Bronchoalveolar fluid showed reactive alveolar macrophages, blood, inflammatory cells and negative cytology. Antimicrobials were discontinued and the patient received high dose intravenous methylprednisolone. Her hemodynamic and respiratory status gradually improved. **Results:** Silicone, more commonly than PMMA, enters the blood stream when inappropriately injected and can cause pneumonitis and an emboli syndrome

UNUSUAL CASE OF COLLAGEN VASCULAR DISEASE-INDUCED DIFFUSE ALVEOLAR HEMORRHAGE REQUIRING ECMO

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Learning Objectives: Extracorporeal membrane oxygenation (ECMO) use for severe hypoxia in collagen vascular disease induced diffuse alveolar hemorrhage (DAH) has some reported success, but its evidence is currently limited. **Methods:** An 18 year old male presents to the ED with acute hypoxic respiratory failure requiring intubation after 4 weeks of dyspnea, fevers, arthralgias, abdominal pain and GI bleeding. Chest imaging showed bilateral infiltrates and pneumomediastinum. Chest tubes were placed and upper GI endoscopy ruled out an esophageal rupture and bleeding. Labs revealed acute renal failure and severe anemia with normal platelets and prothrombin time. His hypoxia persisted despite high PEEP and FIO₂, so he was cannulated for venovenous (VV) ECMO. He remained anuric and continuous renal replacement therapy was started. Bronchoscopy with bronchoalveolar lavage was positive for DAH and negative for infection. He was started on antibiotics and high dose corticosteroids while continuing ECMO for oxygenation. Tidal volumes were maintained at 4ml/kg and FIO₂ was minimized to keep pAO₂ >60. Vasculitis panel was positive for myeloperoxidase antibody, low C3 and C4, and lupus anticoagulant. The clinical presentation and lab findings were suggestive of ANCA vasculitis prompting initiation of plasmapheresis. On day-7 cyclophosphamide was initiated. By day-11, the ECMO-FIO₂ was reduced and his CXR improved. ECMO was discontinued on day-14 and the patient was extubated on day-24. Later, renal biopsy showed positive staining for IgG, IgA, and complement in glomerular capillary loops and mesangium consistent with lupus nephritis. His ANA and antiDNAse antibody remained negative. This patient survived with his mental status intact. He does suffer from chronic lung disease on home oxygen, deconditioning and chronic kidney disease requiring dialysis. **Results:** Here we present an unusual case of an ANA negative lupus induced DAH. The use of ECMO in this patient was clearly

invaluable in treating his refractory hypoxia, and allowed us to obtain a correct diagnosis and start appropriate immunosuppression.

BIPHASIC CUIRASS VENTILATOR USE DURING SPECIAL CIRCUMSTANCES IN THE PEDIATRIC ICU

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Learning Objectives: Negative-pressure ventilation, delivered via BCV, is an alternative to positive-pressure support for the management of respiratory failure. In adults, the BCV has been shown to both facilitate weaning from invasive positive-pressure ventilation (IPPV) and meet the needs of those with neuromuscular weakness. Here we describe three pediatric cases where BCV was used to wean children off IPPV. **Methods:** The first case involves a 2-year-old admitted with septic shock and necrotizing pneumonia. She developed severe air leak syndrome and required veno-arterial ECMO for stabilization. After 7 days, her ARDS and shock had improved, but she was unable to tolerate ECMO decannulation trials due to her significant air leak, despite numerous chest tubes. She was placed on a BCV with continuous negative pressure (CNEP) of -18, which was later increased to -20. She had near-complete resolution of her air leak after 48 hours and was ultimately decannulated on day 32 of ECMO. The second case is that of a 17 month-old with RSV bronchiolitis and severe ARDS requiring veno-venous ECMO. He was decannulated on day 8 and extubated on PICU day 26. Because of significant muscle deconditioning and secretion burden, he failed extubation within 24 hours. BCV (CNEP, -12, increased to -14) was initiated with rapid reduction in IPPV needs and radiographic improvement. He was extubated within 48 hours. The third case is a 2-year-old with adenovirus pneumonia and severe ARDS requiring high-frequency oscillator support. Despite demonstration of appropriate lung compliance, he repeatedly failed attempts to remove IPPV. BCV (CNEP -12) was placed 24 hours before extubation was attempted for the third time. BCV was discontinued on day 3 post extubation. In cases 2 and 3 aggressive chest physiotherapy every 2 hours via the BCV was done for a 24-hour period. **Results:** BCV is an alternative mode of therapy for patients with severe air leak syndromes, even if they are on ECMO support. It can also be used as a tool to wean pediatric patients off IPPV sooner and in patients with severe deconditioning after prolonged intubation

INVASIVE VENTILATION IN AN ADULT WITH ACHONDROPLASIA AND ACUTE RESPIRATORY DISTRESS SYNDROME

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Learning Objectives: An estimated 10,000 individuals in the United States have achondroplasia, which can result in heterogeneous somatic growth disturbances. The unique body proportions of this population make ideal body weight (IBW) less indicative of predicted lung volumes. **Methods:** We present a case of a 30 year old male with achondroplasia and spina bifida who contracted acute respiratory distress syndrome (ARDS). He presented to the Emergency Department (ED) with dyspnea and 2 days of cough. Initially hypoxic, his oxygen saturations were as low as 78%. A chest CT scan demonstrated multifocal pneumonia without pulmonary embolism. After fluid resuscitation, antibiotics and administration of oxygen via high-flow nasal cannula, he was admitted to the ICU for monitoring. He developed worsening respiratory failure, with a blood pH of 7.28, a PaCO₂ of 61 mmHg and a PaO₂ of 80 mmHg on 35L of flow and a FiO₂ of 75%. He was diagnosed with ARDS and was intubated after failure on non-invasive positive pressure ventilation. An attempt to practice ARDSnet protocol was made, however the patient's body habitus and height of 1.14m made calculation of appropriate tidal volumes based on IBW difficult. Radiology was consulted and performed 3D reconstructions of his chest CT and provided an age-matched control. This revealed a total lung volume of 612 mL, nearly a three-fold decrease in height predicted lung volumes when compared to a control volume of 2813 mL. Based on these results, patient's programmed tidal volumes were further reduced. He improved over 2 days, was successfully extubated, and weaned from supplemental oxygen. He was discharged to a rehabilitation facility on hospital day 10. **Results:** Lung protective ventilation is essential to managing severe ARDS in adult inpatients, and to our knowledge