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OXYGENATION VIA BI-VENTRICULAR ASSIST DEVICE FOR EMERGENCY AIRWAY MANAGEMENT

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Case Report: We describe the emergency insertion of an oxygenator into a patient's biventricular assist device (BiVAD) circuit during an airway emergency. A fifty six year old man treated with a BiVAD for cardiogenic shock was noted to be bleeding from a mucosal tear on the left palatoglossal pillar. The oropharynx was packed to promote hemostasis and bleeding seemed to settle. However, twelve hr later the patient's tracheostomy tube blocked suddenly. The mouth and nose remained packed with bloodstained gauze but we were able to ventilate with difficulty through the tracheostomy tube using a Mapleson C circuit noting markedly limited exhalation. Fiber optic bronchoscopy via the tracheostomy revealed a large blood clot at the end of the tube. The scope was maneuvered past the clot and ventilation became easier. Distal to the blockage the airway was clear; no bleeding source was identified. A passage through the clot was cleared using suction catheters and grasper devices but the clot quickly reformed. A size 6.0 cuffed Endotracheal Tube (ETT) was loaded onto an intubating fiber optic scope, passed through the tracheostomy tube, past the clot and positioned just above the carina. Our perfusionist then inserted an oxygenator into the BiVAD circuit creating a Venous-Arterial-ECMO configuration providing an alternative source of gas exchange in case of recurrent airway obstruction and to allow definitive treatment to the bleeding point. While oxygenating the patient via Venous-Arterial-ECMO, bleeding from the traumatized palatoglossal pillar and the tracheostomy site was treated with bipolar diathermy and copious clots were removed from the oropharynx, subglottis and the esophagus. The tracheostomy tube was replaced and the size 6.0 ETT was removed. In this group of patients who are at high risk of hemorrhagic airway complications, the ability to provide gas exchange via an oxygenator in the event of an airway emergency is invaluable. Our unit now considers early insertion of an oxygenator into the circuits of all patients receiving MCS who show signs of airway bleeding.

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BACK PAIN, HYPERTENSION, AND SEIZURES: AN UNUSUAL CAUSE OF HYPONATREMIA

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Case Report: Hyponatremia is a common clinical entity that can result from a variety of causes. Here we describe a rare etiology of symptomatic hyponatremia in a critically ill patient. A 19-year-old female with no significant past medical history presented to the emergency department with a several day history of poorly localized back pain, hypertension, and found with marked hyponatremia of 125 mEq/L. She was thought to be volume depleted but her serum sodium level decreased to 113 mEq/L after volume resuscitation with 0.9% sodium chloride. The patient experienced an acute decline in mental status and she had a generalized tonic clonic seizure. She was admitted to the ICU and was stabilized with administration of 3% sodium chloride. Extensive evaluation into the etiology of her euolemic hyponatremia, including thyroid studies and an adrenocorticotropic hormone (ACTH) stimulation test, was unremarkable. Urine studies were obtained and were consistent with the syndrome of inappropriate antidiuretic hormone (SIADH). The patient was managed with free water restriction, hypertonic sodium chloride, vasopressin receptor antagonists, and antihypertensive medications. After a thorough review of the patient's medications, empiric explant of a recently inserted etonogestrel pellet was performed with resolution of the patient's hyponatremia, back pain, and hypertension. A urine porphobilinogen was found to be significantly elevated and the patient was diagnosed with acute intermittent porphyria (AIP) precipitated by implantation of a subdermal etonogestrel pellet. AIP is one of several disorders that result from derangements in the heme biosynthesis pathway. Patients with AIP will typically be symptom-free until one of several precipitating factors causes increased transit through the porphyrin metabolic pathway causing nonspecific symptoms such as sinus tachycardia, vague abdominal or back pain, and hypertension. AIP exacerbations are also known to cause SIADH via hypothalamic dysfunction caused by damage to the hypothalamic-hypophyseal tracts.

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NEUROTOXICITY ASSOCIATED WITH CEFEPIME DURING IHD AND THE EFFECT OF CVVHDF ON DRUG CLEARANCE

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Case Report: Cephalosporins require dose adjustment in patients with kidney disease to reduce the likelihood of toxic effects. We report a case of seizures in a patient treated with renally adjusted cefepime while receiving intermittent hemodialysis (IHD) that resolved after its discontinuation and treatment with continuous venovenous hemodiafiltration (CVVHDF). Serial plasma concentrations, including prior to start CVVHDF (C_{max}), were collected to determine relevant pharmacokinetic parameters (elimination rate constant (k_{el}) and half-life (t_{1/2}), and the saturation coefficient (SA). All samples were processed at The University of Queensland, Australia. While receiving renally adjusted cefepime for Gram-negative aortic valve endocarditis in an 84-year-old female was noticed to have abnormal mouth and shoulder movements. An electroencephalogram (EEG) demonstrated a left temporal seizure focus and levetiracetam was started. Over the next 48-hr she failed to improve and repeat EEG showed almost continuous discharges suggestive of status epilepticus. Phenytoin was added. The following morning she had minimal improvement and continuous EEG (cEEG) monitoring was initiated showing continued disturbances. Cefepime-induced neurotoxicity was included in the differential and cefepime was discontinued. Her IHD was converted to CVVHDF. The C_{max} was 63.8 mcg/ml and showed a linear decrease over time (25.2 mcg/ml at 8-hr, 16.4 mcg/ml at 12-hr, and 9.0 mcg/ml at 24-hr). The SA at 8-hr was 0.67. The k_{el} and t_{1/2} was 0.061 and 11.4 hr. Over the next 23-hr she improved and the rhythmic activities on her cEEG completely resolved. She was responsive, smiling, and talking. She remained seizure free and was discharged to a skilled nursing facility for physical therapy and dialysis. Neurotoxicity should be suspected in critically ill patients receiving renally adjusted cefepime if the clinical and physical exam is consistent with this unwanted effect. Treatment with CVVHDF effectively removed cefepime.

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CHICKEN POX WITH SEVERE SEPSIS WITH MULTI-ORGAN DYSFUNCTION AND SEVERE RHABDOMYOLYSIS

Sharmili Sinha, Jyotimayee Pati

Case Report: Chicken pox in adults can be more serious than in children. Complications are more common in immunocompromised individuals and pregnant women. However, there have been case reports of secondary bacterial infections mostly pneumonias in immunocompetent adults and rarely instances of severe sepsis. Rhabdomyolysis has been reported in cases of varicella. We here report a young healthy adult with chicken pox with septic shock with multi-organ dysfunction and acute kidney injury with severe rhabdomyolysis. A 45 year male was admitted with chicken pox and pain abdomen for 2 days. On admission he was conscious and in respiratory distress. Within 6hr, he developed severe septic shock, acute respiratory distress syndrome, hepatic dysfunction, acute kidney injury. He was ventilated and put on vasopressors after fluid resuscitation. His procalcitonin was high (25ng/ml). He was dialyzed due to persistent anuria and acidosis. His hemodynamics and ventilation status gradually improved, but renal failure persisted with a high catabolic state despite daily dialysis for 4 days. On day 8, rhabdomyolysis was suspected and serum CPK was found to be very high (15765U/L). His muscles appeared wasted. Good hydration was maintained. He was dialyzed even after his urine output improved in view of high urea and creatinine values. His sensorium slowly improved, though limb power was 1/5 in all limbs. He was diagnosed to have critical illness myopathy accentuated by severe rhabdomyolysis. On discharge, his limb power was 4/5 in all 4 limbs with muscle wasting. On day 15 after discharge, his limb power was normal. After 90 days, he had full recovery of muscle mass. Discussion: We successfully treated a case of varicella zoster with septic shock with multi-organ dysfunction and acute kidney injury complicated by severe rhabdomyolysis. High grade of rhabdomyolysis contributed to persistence of kidney injury for long time and accentuated the critical illness myopathy with severe muscle wasting. He improved with supportive therapy and good hydration.