

to the emergency department where he was diaphoretic and agitated. He was hypertensive, tachycardic, tachypneic, and febrile. He was in atrial fibrillation with rapid ventricular response. Multiple prescription bottles were found in his apartment including several bottles of liothyronine (T3) and levothyroxine (T4). Approximately 180 pills of each were missing. Initial TSH was 0.064 (ref 0.340–5.600 uIU/mL), free T3 was >30 (ref 2.50–3.90 pg/mL), free T4 4.46 (ref 0.61–1.12 ng/dL). In the ICU he was treated with dexamethasone, cholestyramine, carnitine and propranolol. He required mechanical ventilation due to respiratory distress. His hospital course was complicated by aspiration pneumonia, bilateral pulmonary embolism and severe epistaxis. He eventually converted to normal sinus rhythm after 20 days. His mental status gradually improved with normal TSH and free T4 levels by hospital day 27 and discharged on hospital day 34 (T3 remained below normal at time of discharge). **Results:** We used dexamethasone to decrease T4 to T3 conversion, cholestyramine to decrease the resorption of thyroid hormone, carnitine to inhibit thyroid hormone action and propranolol to block the toxic adrenergic effects. This case illustrates the dangers and complications of combined intentional overdose of exogenous T3 and T4 using various interventions to manage thyrotoxicosis.

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REFRACTORY HYPERAMMONEMIA IN A POST-GASTRIC BYPASS SURGERY PATIENT

Amanda McCambridge, Amra Sakusic, Ognjen Gajic

Learning Objectives: Severe malnutrition is a well described complication of gastric bypass surgery and predisposes to a hypercatabolic state resulting in

hyperammonemia. We present a patient with severe malnutrition and refractory hyperammonemia after previous gastric bypass surgery. **Methods:** A 44 year old woman with untreated bipolar disorder, chronic pain syndrome status post intrathecal hydromorphone pump, and previous gastric bypass with subsequent anorexia was admitted for severe protein calorie malnutrition. Over several days she developed progressive stupor and coma necessitating ICU admission. High protein tube feeding and supplements were initiated. EEG demonstrated diffuse metabolic slowing. MRI brain was negative. LFTs were mildly elevated and abdominal ultrasound revealed mild hepatic steatosis but no cirrhosis. Serum ammonia was markedly elevated (186umol/L). Lactulose and rifaximin were administered without demonstrable improvement. She was intubated for airway protection and empirically treated with sodium phenylacetate, sodium benzoate, arginine, and carnitine. The intrathecal hydromorphone was tapered off. Ornithine, arginine and citrulline were within normal limits, and the genetic evaluation of ornithine transcarbamylase deficiency was negative. Gradually her ammonia level decreased to 45umol/L with concomitant improvement in mental state and subsequent extubation. **Results:** Current literature shows high mortality from hyperammonemia after gastric bypass surgery indicating the importance of early diagnosis and treatment. Our patient's nutritional deficiencies and hypercatabolic state resulted in extreme hyperammonemia, necessitating nitrogen scavenger administration. It is imperative to supply protein-rich feeds despite hyperammonemia in severely malnourished patients. Without protein administration the catabolic state progresses, exacerbating hyperammonemia. Nitrogen scavengers should be coadministered until balance is restored. This case demonstrates a situation in which high protein feeding and nitrogen scavengers are necessary to treat an unusual cause of hyperammonemic coma.

Research Snapshot Theater: Case Reports: Ethics/End of Life/Palliative Care

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EARLY HORMONAL RESUSCITATION AFTER NONSURVIVABLE BRAIN INJURY: IMPACT ON ORGAN RECOVERY

Richard Arbour, Chet Morrison

Learning Objectives: Cardiopulmonary instability following catastrophic brain injury is consequent to multisystem effects of brain herniation. Delaying hormonal resuscitation (HRT) pending brain death testing and consent for organ procurement causes significant delay between brainstem herniation and optimal mechanism-based care for organ function. This results in poor organ viability, less favorable transplant outcomes and puts at risk the option of organ donation for families. Our team demonstrates dramatically improved cardiopulmonary stability and effectiveness of early hormonal resuscitation in two patients following non-survivable brain injury. **Methods:** Two patients following non-survivable brain injury exhibited massive brain edema consequent to intraparenchymal hemorrhage and prolonged asphyxia. Terminal brainstem herniation was evident due to biphasic cardiovascular state, pupils fixed, dilated and at midpoint, absent brainstem reflexes and apnea. Confounding factors in neurological evaluation were ruled out and brain death (BD) testing was appropriate. Refractory cardiopulmonary instability limited safety in BD testing, apnea test and confirmatory neurodiagnostics. To facilitate BD testing and preserve option of organ donation for patient's families, HRT using high-dose glucocorticoids, thyroid hormone replacement and vasopressin were initiated prior to brain death testing. In these two patients receiving early HRT, rapid improvement in oxygenation and cardiovascular parameters occurred, decreasing ventilation and vasopressor requirements. Formal BD protocols were completed, families consented and 7 total organs were transplanted. **Results:** These cases are significant because HRT was utilized as mechanism-based care for profound cardiopulmonary instability early in the care continuum and was effective, ethically sound and easy to use. HRT is appropriate for wider use following apparent terminal brainstem herniation. In our unit, when patients are encountered as described here, we initiate HRT to facilitate brain death testing and preserve the donation option for patient's families.

1691

WALKING ECMO: WHEN PATIENT CARE, ETHICS, AND BUSINESS COLLIDE

William Mulvoy, Sonia Nhieu

Learning Objectives: The use of ECMO in adults with severe cardiopulmonary failure has increased significantly in the United States. We describe a 45 year-old female, blood type AB, who underwent a double lung transplant in 2010, the first in Louisiana after Hurricane Katrina. **Methods:** In 2015, she suffered a rapid decline in lung function due to chronic rejection and bronchiolitis obliterans (BOS). In January 2016, she developed fulminant pulmonary failure requiring intubation and was emergently placed on VV ECMO via an Avalon catheter, allowing her to be extubated and listed for re-transplantation soon after. Since then, our patient has remained extubated and is ambulating on VV ECMO while being acutely monitored in our cardiac ICU. Circuit changes are done at the first signs of hemolysis, initially every 2–3 weeks while on heparin. However, with the recent change to a bilvalirudin infusion, circuit changes have been about 3 months apart. More importantly, she has not had any additional end organ damage. **Results:** This particular VV ECMO patient demonstrates the utility of this lifesaving modality as a bridge to definitive therapy in the lung transplant population. However, the current debate involves maintaining functional patients on VV ECMO indefinitely and not just as a bridge. While our patient has done extremely well on VV ECMO as a bridge to re-transplantation, is it an obligation of the hospital to provide unlimited, expensive resources indefinitely? VV ECMO maintenance, management, hospital care, personnel support, and ICU coordination is very expensive. While the average waiting time for all blood types in our region is approximately 8 weeks, patients with an AB blood type have waited over 12 months for a lung transplant, prompting the ethical and business discussion regarding the continued management of a patient in this situation. The course of care for our patient has increased the awareness of the utility and advances of ECMO, but more so the need for ethical and moral guidelines for continued long-term care in the event it becomes destination therapy.