



## Introduction

Hypoglycemia is defined as a blood sugar level below 70 mg/dL. Prolonged hypoglycemia can be especially dangerous as it can cause seizures and coma. The mechanism behind this involves the temporary rise in brain osmolality that follows the movement of potassium and sodium into the brain.<sup>1</sup> As hypoglycemia persists, there will be a depletion of energy (specifically glucose, glutamate, and lactate) which will lead to onset of coma.<sup>1</sup> It is not typical for a prolonged hypoglycemic coma to end fatally, and in a study (Aronson et Al., 2016) of 494 patients with severe hypoglycemia, 10% of patients died.<sup>2</sup> In patients with bacteremic pneumococcal infections, hypoglycemia occurred in 8.6% of cases and was associated with higher mortality and a more severe disease course.<sup>3</sup>

## Case Presentation

**HPI:** 63-year-old female presents to the ED with altered mental status. The patient has an extensive medical history of dementia, obesity, hypertension, COPD, anemia, and Schizophrenia. The patient was brought in after her neighbors called for a wellness check and she was found with altered mental status and self-neglect. She was admitted under a Baker Act as she was uncooperative and disorientated to time and place. The patient remained aggressive and non-compliant towards the health care team before becoming withdrawn and somnolent. The patient's health quickly took a turn as she became hypotensive, hypoglycemic (57 mg/dL), and eventually comatose after stating she felt 'unwell'. Patient tested positive for Covid-19 and sputum cultures grew *Enterobacter cloaca*. The patient had labored breathing with pulmonary edema and was intubated shortly after for acute hypoxemic respiratory failure. It was suspected that her comatose state and altered mental status was due to prolonged subclinical seizures as a result of prolonged hypoglycemia and hypotension, originally suspected due to Myxedema coma. She was never hyperthermic to consider neuroleptics or malignant hyperthermia as a result of the Haldol-decanoate. Patient was afebrile so meningitis was not suspected.

**Past Medical History:** dementia, obesity, hypertension, COPD, anemia, and Schizophrenia

**Past Surgical History:** Roux-en-Y Gastric Bypass (2019)

### Physical Exam

**General:** Alert, No acute distress, no verbal response due to intubation

**HENT:** ET tube inserted, NG tube inserted

**Respiratory:** Bilateral rales heard on lower lobes during auscultation, Respirations are non-labored, Breath sounds are equal

**Cardiovascular:** Normal rate, Regular rhythm, Normal peripheral perfusion, edema in all extremities and abdomen

## Imaging



Figure 1. 1-view Chest X-ray showing moderate pulmonary congestion, small bilateral pleural effusions, and an increased density in the right lower lung likely due to a layered pleural effusion

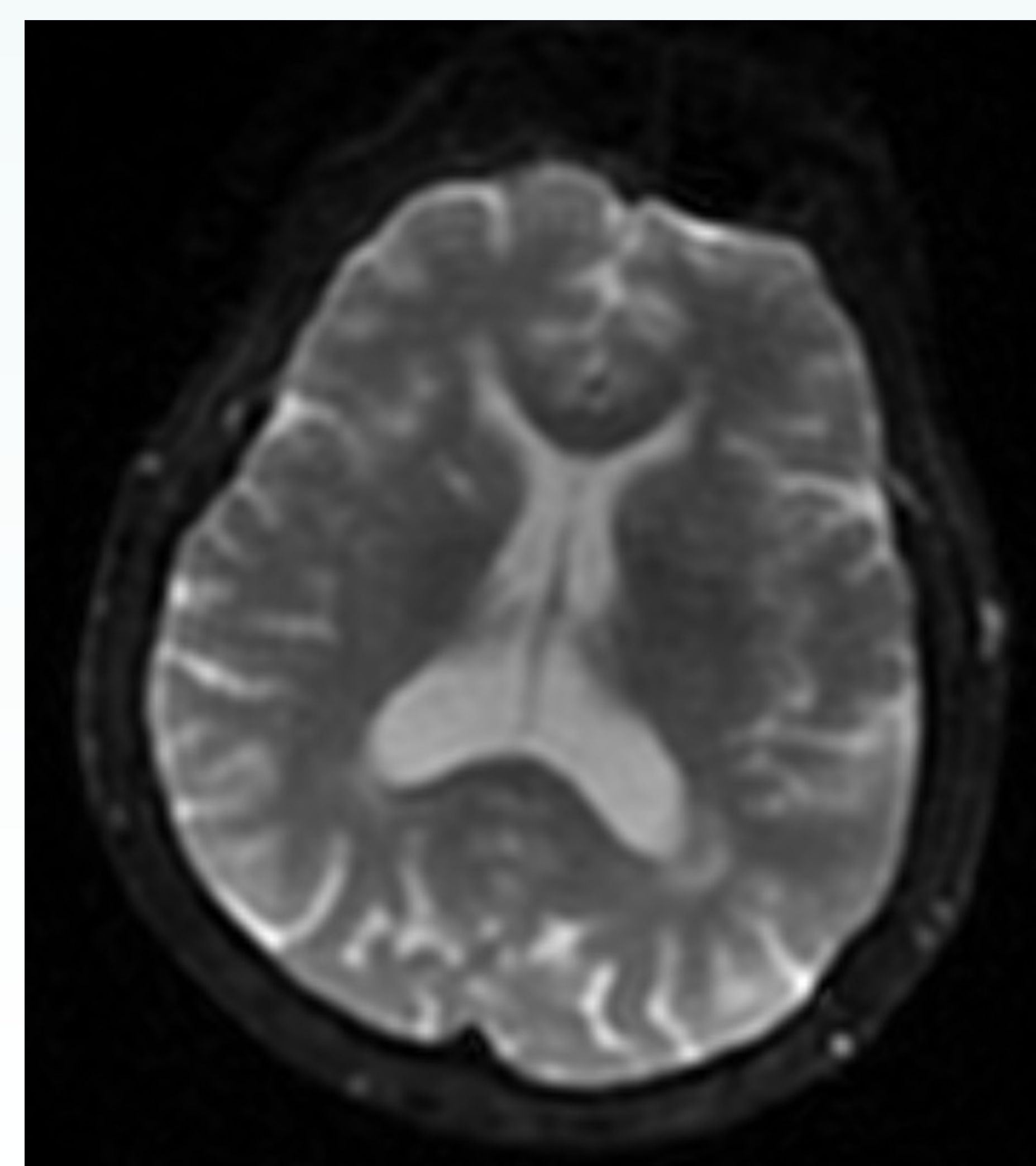


Figure 2. MRI of the Brain w/o contrast – no evidence of acute ischemia. Noted severe motion artifact.

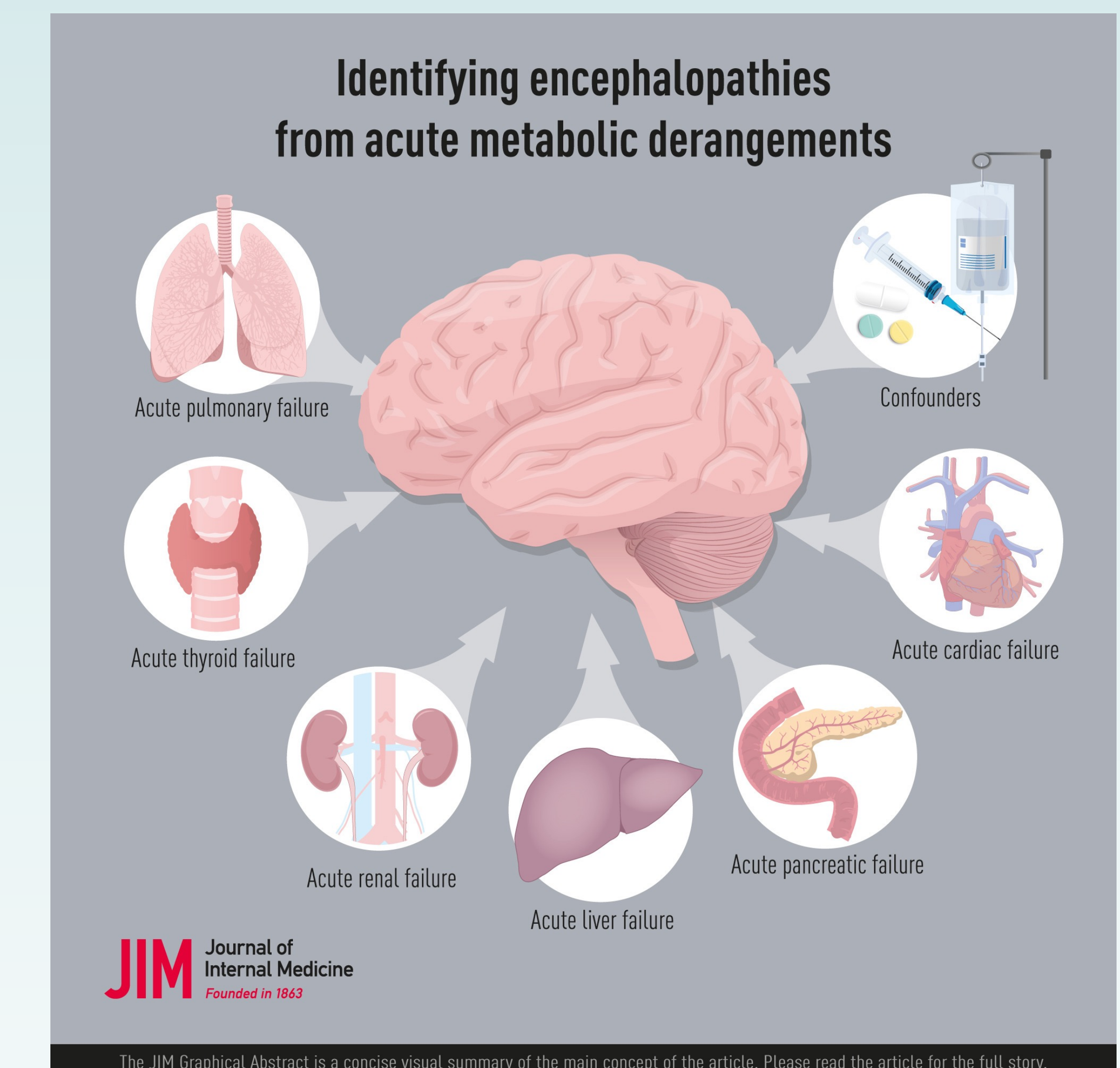


Figure 3 – Journal of IM figure portraying potential causes on Encephalopathy

## Results

Proper blood glucose management is the key to prevention of a hypoglycemic coma. All patients suspected of having sepsis should have their glucose routinely checked to avoid missing hypoglycemia which could worsen the patient's prognosis.<sup>3</sup> This can be difficult in a patient with a history of psychiatric diagnoses, as well as comorbidities such as obesity and hypertension. Supportive treatment of Covid pneumonia and possible resulting bacterial pneumonia would lessen the burden of the hospital stay.

## References

- 1 Arieff, A. I., Doerner, T., Zelig, H., & Massry, S. G. (1974). Mechanisms of seizures and coma in hypoglycemia. Evidence for a direct effect of insulin on electrolyte transport in brain. *The Journal of clinical investigation*, 54(3), 654–663. <https://doi.org/10.1172/JCI107803>
2. Aronson, J. K. (2016). *Meyler's side effects of drugs: The International Encyclopedia of Adverse Drug Reactions and Interactions*. Elsevier Science.
3. Hypoglycemia associated with bacteremic pneumococcal infections. Jan, I-Shiow et al. *International Journal of Infectious Diseases*, Volume 13, Issue 5, 570 - 576