From the Brain to the Liver, Spine, and Thigh Oh My! A Non-Traditional Presenting Grade II Brain Meningioma

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INTRODUCTION

- Out of **139.8 million** annual ER visits in the United States, **18.3 million are admitted** with some revisiting the ER after discharge known as a "bounce back".
- A study from National Hospital Ambulatory Medical Care Survey (NHAMCS), 2010–2018 found that **4.5% were revisits within 72 hours**. Of those revisits, 2.2% were high risk (those with serious adverse outcomes). About 2% of high risk revisit patients died.
- In a study by Ohio Health, researchers found the most common bounce backs were due to abdominal pain, pulmonary concerns, and neurological issues.

Risk stratifications have been developed for symptoms including chest pain and TIAs, however there has not been a well-researched model for more complex or systemic neurological concerns. This case study will explore the gap in the risk stratification scores in Emergency Medicine and how developing **a model may help reduce the threshold for ER readmissions.**

CASE DESCRIPTION

A 57-year-old male, with a diagnosis of recurrent atypical meningiomas with masses to the spine and femur, arrives by ambulance to the ER with epigastric and right upper quadrant pain, alongside left-sided upper extremity and bilateral leg weakness with mental fog. Family states the left-sided weakness and mental fog began about 24 hours ago and has progressively worsened. **Neurological** symptoms were deemed secondary to existing brain tumors despite an absence of observed changes in tumor size and cerebral edema volume in repeat brain imaging.

AFFECTED BY BOUNCE BACKS?

PHYSICAL EXAM / FINDINGS

Neurological:
Mental Status: He is alert and oriented to person and place.
Cranial Nerves: Left facial weakness.
Strength: Left grip 1/5, left shoulder 3/5, left LE 5-/5, otherwise strength 5/5. Left sensory/motor neglect.
Coordination: Finger-Nose-Finger Test abnormal.

CT of the abdomen revealed inflammation of the gallbladder and masses on the liver. The patient was taken for an emergency cholecystectomy and discharged the next day with a recommendation to follow up with neurosurgery and oncology.

Two days after discharge, the patient re-presented to the ER with rapid onset of neurological symptoms including catatonic-like symptoms such as inability to walk or speak. Labs and a new MRI were performed, the patient was empirically treated for sepsis secondary to presumed meningitis and was admitted to the hospital.

Figure 1. Most recent MRI scan of the patient compared to physical signs

Lab Values:
Procalcitonin: .06 (H), Lactate: 2.2 (H), Chloride: 114 (H), Anion Gap: 5 (L), BUN: 24 (H), Calcium: 8.3 (L), Albumin: 2.9 (L), Total Protein: 5.1 (L), WBC count is 3.9 (H), hemoglobin 11.2 (L), hematocrit 32.7 (L), platelet count 144,000 (L), Sodium 130 (L), chloride 98 (H),

Differential Diagnosis: Sepsis, Encephalopathy Acute, Seizure Disorder, Atypical Meningioma, Stroke

CASE DISCUSSION

- This incident marks the **third** ER visit in three months for neurological symptoms. During previous visits, the **family expressed concerns about the neurologic changes** and requested admission and inpatient oncology consultations. **He was discharged each time with unexplained neurological symptoms.**
- Bounce back occurred less than 72 hours after discharge, where patient was treated for sepsis and meningitis. Final diagnosis confirmed Strep B Meningitis.
- **Unexplained or potentially catastrophic symptoms should be thoroughly investigated.**
- Common neurological emergencies that present in the ER include acute stroke, status epilepticus, subarachnoid hemorrhage, neuromuscular weakness, and spinal cord injury. These conditions require prompt recognition and treatment but can be difficult to diagnose furthering the **need for lower admission thresholds**.

CONCLUSION

- **While the outcome of the patient would not have changed, the bounce back nature of the case should be further investigated.**
- Physicians regularly utilize HEART score for chest pain and ABCD^2 scores for stroke identification; however, there are no existing risk stratification scores for abdominal pain or neurological deficits, both which contribute to a large portion of bounce backs.
- This case highlights the **potential for a neurological risk stratification** score to create admitting criteria for unexplained neurological symptoms.

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