Repeat Head CTs for Altered Mental Status After Initially Negative Scans in Non-Neuroscience Intensive Care Unit Patients: Are We Overimaging?

Gelareh Sadigh MD, Falgun Chokshi MD, Richard Duszak Jr. MD

Department of Radiology and Imaging Sciences
Emory University School of Medicine, Atlanta, GA
Disclosure

• None to disclose.
**Introduction**

- Repeat imaging has been criticized by some as unnecessary imaging.

- Unnecessary medical services, including the repetition of medical tests, has been estimated to contribute to $210 billion in healthcare costs annually.

- Hospitalized patients frequently undergo repeat imaging of the same body region for the same indication during the same stay.
Purpose

- To determine the utilization rate and diagnostic yield of repeat head CT examinations in non-neuroscience ICU patients with altered mental status (AMS) after an initially negative head CT examination during that same hospital stay.
Methods

Inclusion Criteria:

• Consecutive patients 18 years or older
• Hospitalized between July 2011 and June 2013 in ICUs of two university hospitals
• Underwent same-admission repeat head CT examinations for the sole provided indication of AMS (ICD-9 code 780.97)

Exclusion Criteria:

• Neuroscience ICU patients (e.g., neurosurgical, neurology critical care)
Methods

- Radiology reports of patients’ initial head CTs reviewed and categorized:
  - Negative
    - Normal
    - Abnormal but not actionable, such as encephalomalacia
  - Positive
    - Acute actionable findings, such as new or worsening hemorrhage
- The frequency of patients with initially negative head CTs was calculated and the findings on repeat studies were assessed.
Results

98 included patients:
Mean age: 58 years
48% male

1,375 ICU Patients with Head CT for Altered Mental Status

437 Underwent a Repeat Head CT
937 Underwent No Repeat Head CT

339 in Neuroscience ICU
65 in Surgical ICU
34 in Medical ICU

Included in study
Results

- Of patients with a second negative head CT, 13% (5/37) underwent a third repeat head CT. These were all negative.
- Repeat imaging was independent of ICU type, age and race.
Conclusion

- Over half of non-neuroscience ICU patients with AMS and an initially negative head CT undergo at least one repeat head CT examination for that same indication during their hospital stay.

- In over one-quarter of these cases, the repeat head CT is positive, supporting the appropriateness of repeat imaging in this unique and specific setting.
Thank You!

Questions?
gsadigh@emory.edu