70 y/o M with confusion and recent fall

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Patient Presentation

• 70 y/o M with week long history of frequent falls and confusion. Patient fell and hit head on one occasion.
• Patients admits to dizziness.

• PMHx: Alzheimer’s disease, HTN, diabetes, dyslipidemia
• Vitals: WNL except HTN (159/92)
• Physical Exam: WNL

What Imaging Should We Order?
Select the applicable ACR Appropriateness Criteria

<table>
<thead>
<tr>
<th>Clinical Condition:</th>
<th>Head Trauma</th>
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</thead>
<tbody>
<tr>
<td>Variant 2:</td>
<td>Minor or mild acute closed head injury (GCS ≥13), imaging indicated by NOC or CCHR or NEXUS-II clinical criteria (see Appendix 1). Initial study.</td>
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</tbody>
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<table>
<thead>
<tr>
<th>Radiologic Procedure</th>
<th>Rating</th>
<th>Comments</th>
<th>RRI.*</th>
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</thead>
<tbody>
<tr>
<td>CT head without IV contrast</td>
<td>9</td>
<td></td>
<td>⭐⭐⭐⭐</td>
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<tr>
<td>MRI head without IV contrast</td>
<td>5</td>
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<td>O</td>
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<tr>
<td>MRA head and neck without IV contrast</td>
<td>2</td>
<td></td>
<td>O</td>
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<tr>
<td>MRA head and neck with and without IV contrast</td>
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<td>O</td>
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<tr>
<td>CTA head and neck with IV contrast</td>
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<tr>
<td>MRI head without and with IV contrast</td>
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<tr>
<td>MRI head without IV contrast with DTI</td>
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<td>CT head without and with IV contrast</td>
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<tr>
<td>CT head with IV contrast</td>
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<tr>
<td>Te-99m HMPAO SPECT head</td>
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<td>FDG-PET/CT head</td>
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<td>X-ray skull</td>
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<td>Arteriography cervicocerebral</td>
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</tbody>
</table>

*Relative Radiation Level: 1,2 usually not appropriate; 4,5,6 may be appropriate; 7,8,9 usually appropriate.
Findings (unlabeled)
Findings: (labeled)

CT Head without Contrast
- Hypodensity with suspected underlying vasogenic edema.
- Concern for underlying mass.
- Recommended MRI with and without contrast for further characterization.
Findings (unlabeled)
Findings (labeled)

Axial B1000

Increased signal
Right Frontal Cortex

Indicates Restricted Diffusion:
Non-specific indicator of hemorrhage, neoplasm, infarct, ictal focus, demyelination or infection

Axial ADC

Decreased signal
Right Frontal Cortex

Axial FLAIR

Heterogeneous lesion with surrounding vasogenic edema

Axial Postcontrast T1

Ring enhancing lesion
Differential Dx for Ring Enhancing Lesion

• Mnemonic = MAGIC DR
  M = Metastasis
  A = Abscess
  G = Glioblastoma
  I = Infarct
  C = Contusion
  D = Demyelinating Disease
  R = Radiation Necrosis or Resolving Hematoma
Our Patient

• Neurosurgical biopsy:
  well-circumscribed lesion, purulent material, STAT culture: gram + cocci on gram stain and frozen

• Pathology Report:
  Reactive brain parenchyma with abscess, mixed inflammation and foamy macrophages. No evidence of neoplasia. Bacterial colonies present.
Final Dx:

Brain Abscess
Brain Abscess

• Pathogenesis:
  Invasion either by direct spread or hematogenous seeding
  Direct spread 20-60% of cases

• Most commonly via Staph aureas, Strep species, Bacteroides fragiles

• Presentation is non-specific:
  Fever, headache, vomiting

• S/p Brain abscess evacuation 80% of patients have good outcomes

• Poor prognostic indicators:
  -delayed diagnosis/presenting symptoms
  -multiple lesions
  -fungal etiology
References:


