33 year old man presents with seizure

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Patient Presentation

• HPI: 33 year old male recently diagnosed with Cushing disease 6 weeks ago w/ suspicion for pituitary mass and scheduled MRI. Pt was at home when the patient was reported to be unresponsive with tonic-clonic activity of the bilateral upper and lower extremities lasting approximately 20 seconds.

• Physical exam: GCS 13 (E3, V4, M6), A&Ox2, L sided facial weakness, 1/5 L upper extremity, 2/5 L hip flexor, L knee flexion/extension, 3/5 in L ankle dorsiflexion/plantarflexion

• Pertinent labs: CBC wnl
What Imaging Should We Order?

CT head w/o contrast was ordered initially and MRI w/ & w/o infusion was ordered for further evaluation.

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Appropriateness Category</th>
<th>Relative Radiation Level</th>
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<tbody>
<tr>
<td>CT head without IV contrast</td>
<td>Usually Appropriate</td>
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<tr>
<td>MRI head without IV contrast</td>
<td>Usually Appropriate</td>
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<td>MRI head without and with IV contrast</td>
<td>May Be Appropriate</td>
<td>⭐⭐⭐⭐⭐</td>
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<tr>
<td>CT head with IV contrast</td>
<td>Usually Not Appropriate</td>
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<td>CT head without and with IV contrast</td>
<td>Usually Not Appropriate</td>
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<tr>
<td>FDG-PET/CT brain</td>
<td>Usually Not Appropriate</td>
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<td>MEG</td>
<td>Usually Not Appropriate</td>
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<td>MRI functional (fMRI) head without IV contrast</td>
<td>Usually Not Appropriate</td>
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<td>HMPAO SPECT or SPECT/CT brain ictal and interictal</td>
<td>Usually Not Appropriate</td>
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Findings CT head w/o contrast:
Findings: Possible lesion in R parietal lobe
Findings MRI Brain w/ & w/o contrast:

Axial T2 FLAIR
Findings MRI Brain w/ & w/o contrast:

Area of increased FLAIR signal likely reflecting vasogenic edema
Findings MRI Brain w/ & w/o contrast:

Axial T1 Post contrast

Axial DWI

Pituitary coronal post contrast
Findings MRI Brain w/ & w/o contrast:

Peripherally enhancing multi-loculated lesion with internal restricted diffusion involving the precentral gyrus. Imaging findings support an infection, likely a multi-loculated abscess.

Likely atypical infection given multilocated appearance.

Abscess was resected by neurosurgery with cultures positive for Nocardia.
Findings MRI Brain w/ & w/o contrast:

Further findings showed pituitary microadenoma measuring up to 0.9 cm.
Findings CT Chest w/ contrast:

Further work up with CT chest showed nodular opacities in both upper and lower lobes with areas of cavitation. These likely represent an infectious/inflammatory process.
Final Dx:

Disseminated Nocardiosis with lung and brain involvement
Case Discussion

• Nocardia is an aerobic, gram positive, branching filamentous rod-shaped, catalase positive bacteria that can be found worldwide in soil

• This organism mostly causes pathology among immunocompromised individuals

• Disseminated nocardiosis commonly affects the lung and brain with or without bacteremia

• Treatment depends on severity but choices includes TMP-SMX or imipenem with amikacin
Case Discussion

- In the case of our patient, the diagnosis of Cushing disease with pituitary adenoma (60-70% of cases) could be the source of immunosuppression due to hypercortisolism.

- Hypercortisolism causes dysregulation of the cells of the immune system:
  - Neutrophilia: Glucocorticoids increase the release of polymorphonuclear cells from the bone marrow, but causes shedding of the adhesion molecule leading to decreased extravasation of the cells to peripheral tissue.
  - Monocytopenia: Patients with Cushing disease have a decreased classical monocyte count but increased levels of nonclassical and intermediate monocytes. Nonclassical and intermediate monocytes have decreased phagocytic activity.
  - Natural killer cell and lymphocyte activity are decreased in the setting of Cushing disease.
References:


