INTRACRANIAL AND SPINE LEPTOMENINGEAL, RADICULAR AND PULMONARY COCCIDIOIDOMYCOSIS IN IMMUNOCOMPETENT PATIENT

Objectives

To present a case report of an unusual fungal infection, especially in immunocompetent patients.

History:

Male, 17 years old, living in The Western US since January 2023

Early November/2023
- Fever and headache.

11/18/23
- Admitted to the hospital for investigation.

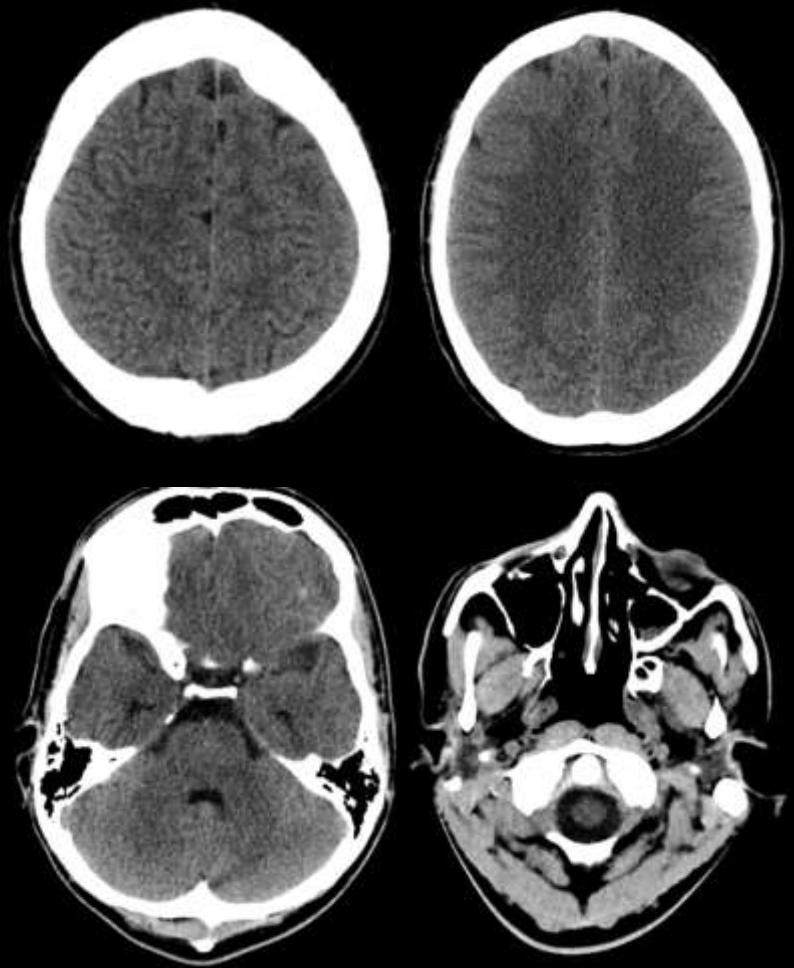
11/22/23
- Worsening of his mental state
- Full investigation, including head CT, head and spine MRI, chest X-ray and CT, blood and CSF analysis
- A cavitary lesion was found on the right superior pulmonary lobe.

12/22/23
- Maintaining headache
- Worsening of hydrocephalus
- Ventriculoperitoneal shunt was performed.

- Microbiological diagnosis of Coccidioidis immitis on CSF culture and blood test.
- Initially, the possibility of co-infection with TB was considered, but the hypothesis was discarded.

Initial assessment – X-ray and Head CT (11/18/2023)

Exams without abnormalities.



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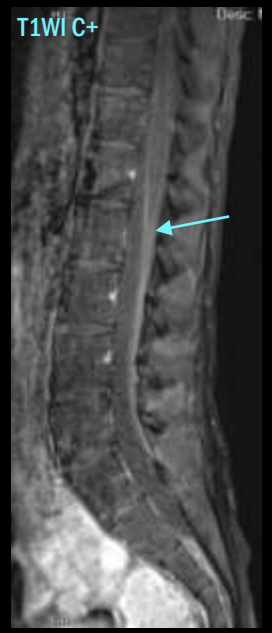
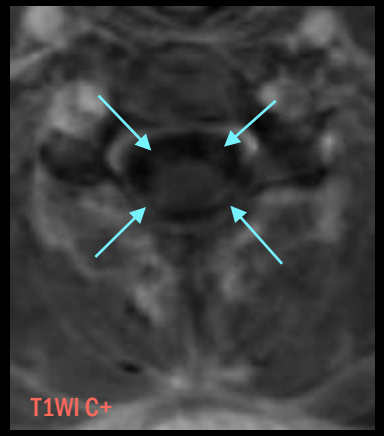
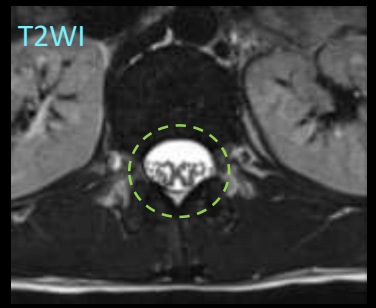
11/22/23 – SPINE MRI

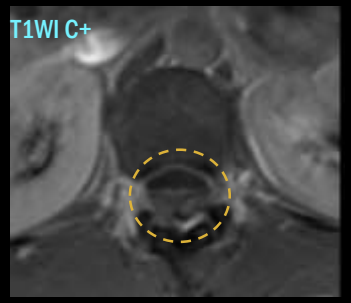
LUMBAR

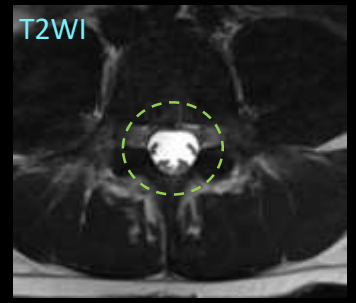


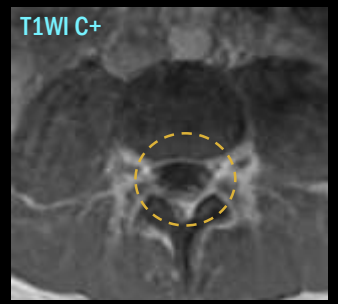
CERVICAL





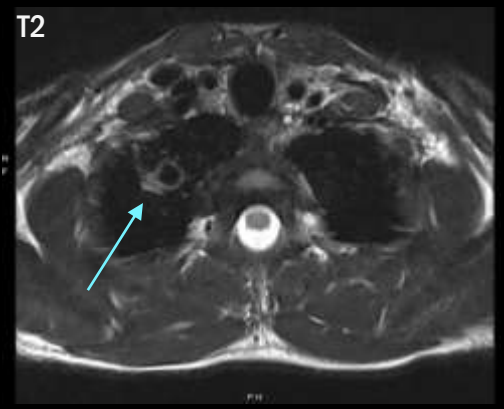


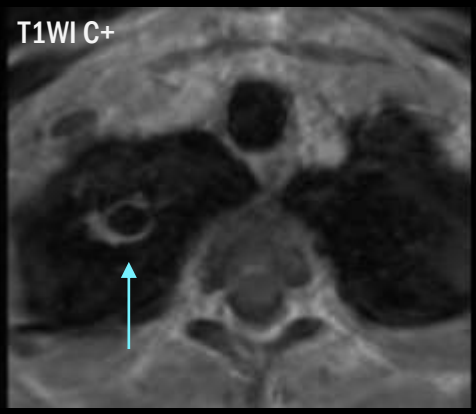




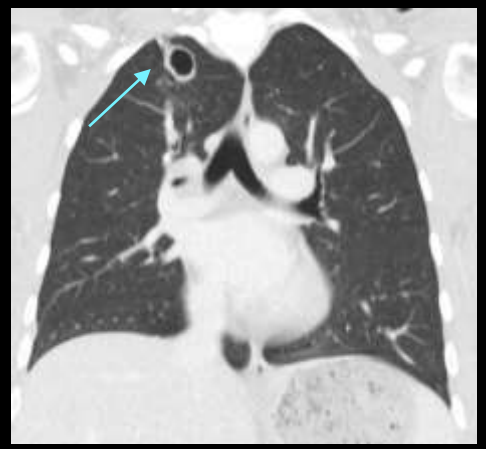
Radicular enhancement, suggesting infectious/inflammatory polyneuropathy.
Spine leptomeningeal enhancement that may be infectious.

Thoracic level revealed a cavitary lesion at the apex of the right lung.





11/27/23 – CHEST CT



Cavitary lesion in the right upper pulmonary lobe, with adjacent tree-in-bud nodules.

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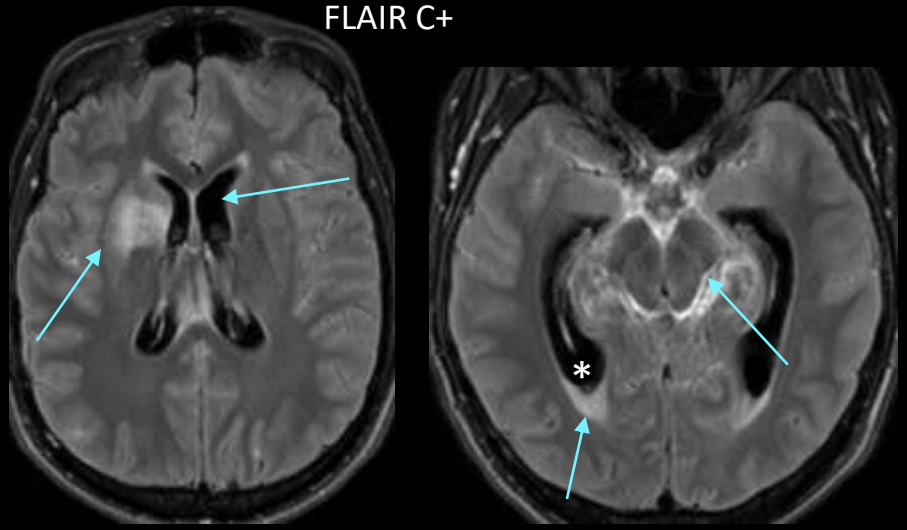
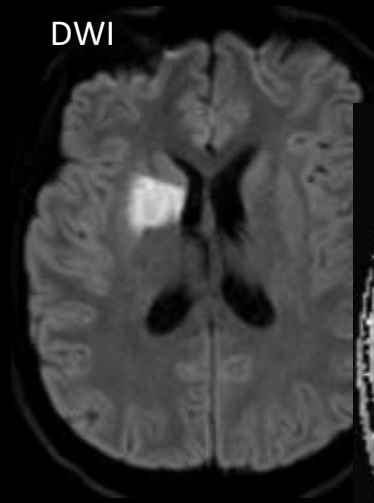
HEAD MRI (11/22/23)

FLAIR C+

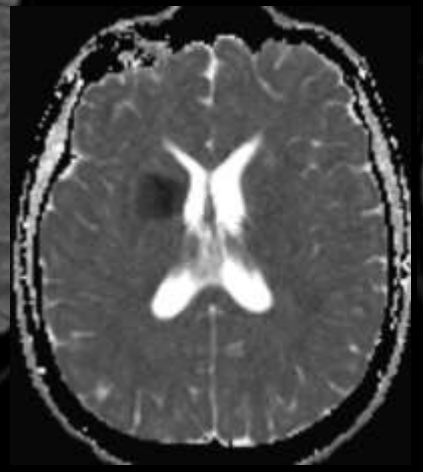


- Meningitis
- Ventriculitis
- Basal ganglia infarction
- Mild hydrocephalus

DWI



ADC



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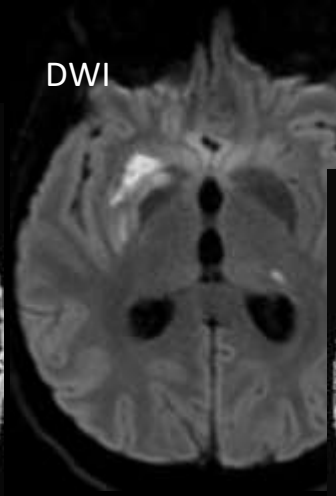

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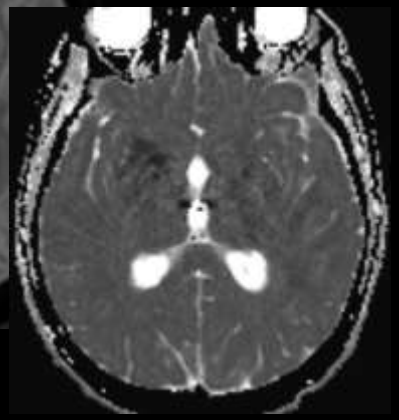
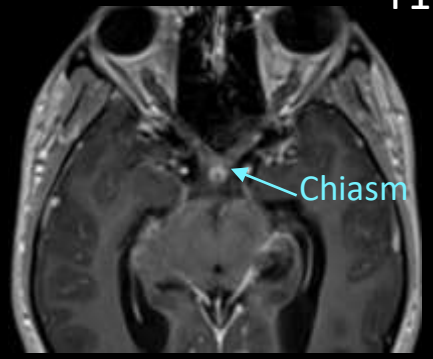
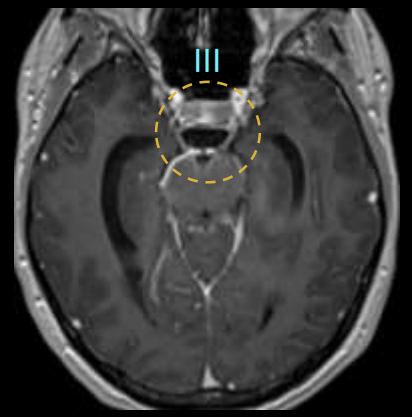
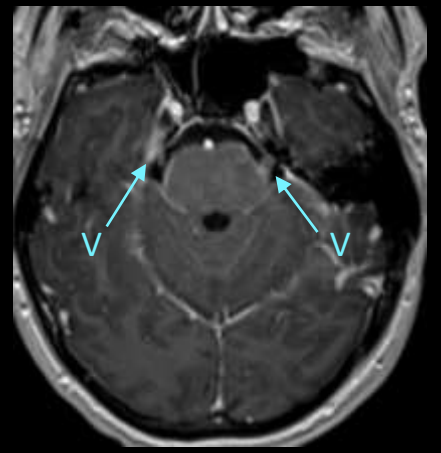
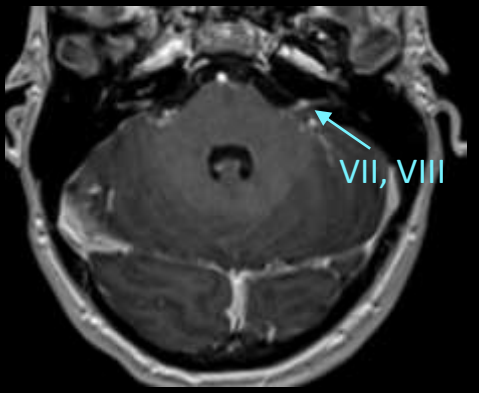


T1 C+









- Leptomeningeal enhancement involving cranial nerves

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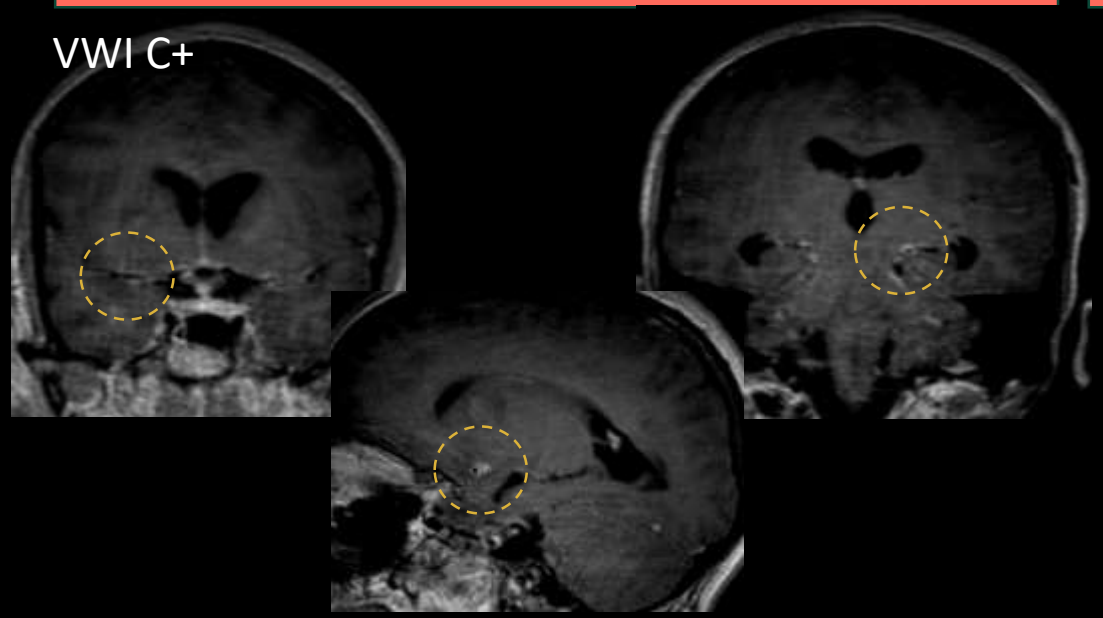
HEAD MRI (11/22/23)

VWI C+



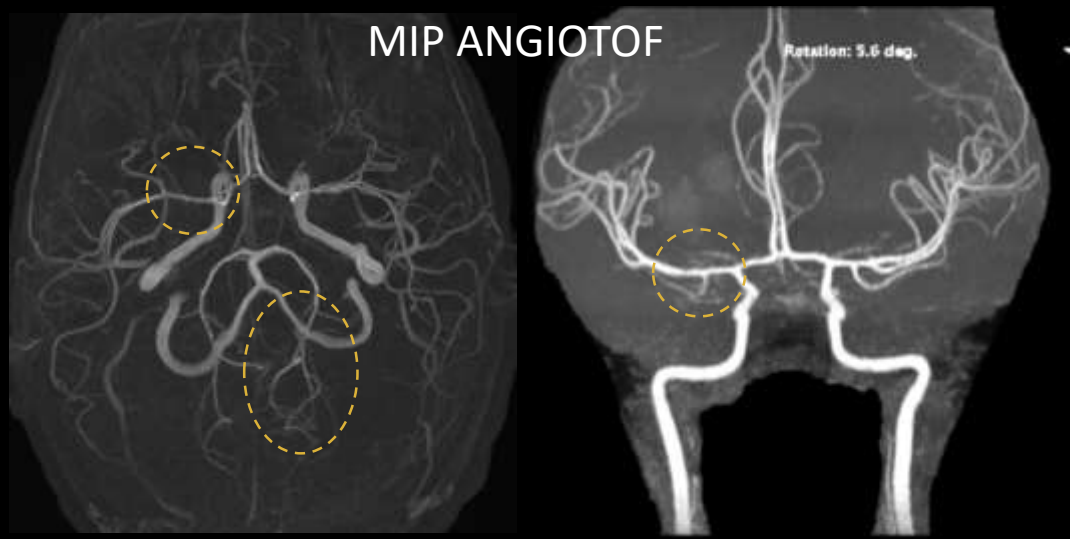
Leptomeningeal enhancement involving intracranial arteries, especially the right middle cerebral and left posterior cerebral arteries.

CSF ANALYSIS (11/23/23)	
Total Proteins:	High
Total nucleated cells:	High
Glucose	Normal
MTB complex PCR:	Not detected
Fungal Culture:	Rare *Coccidioides immitis*

Tests to assess immunodeficiency: negative

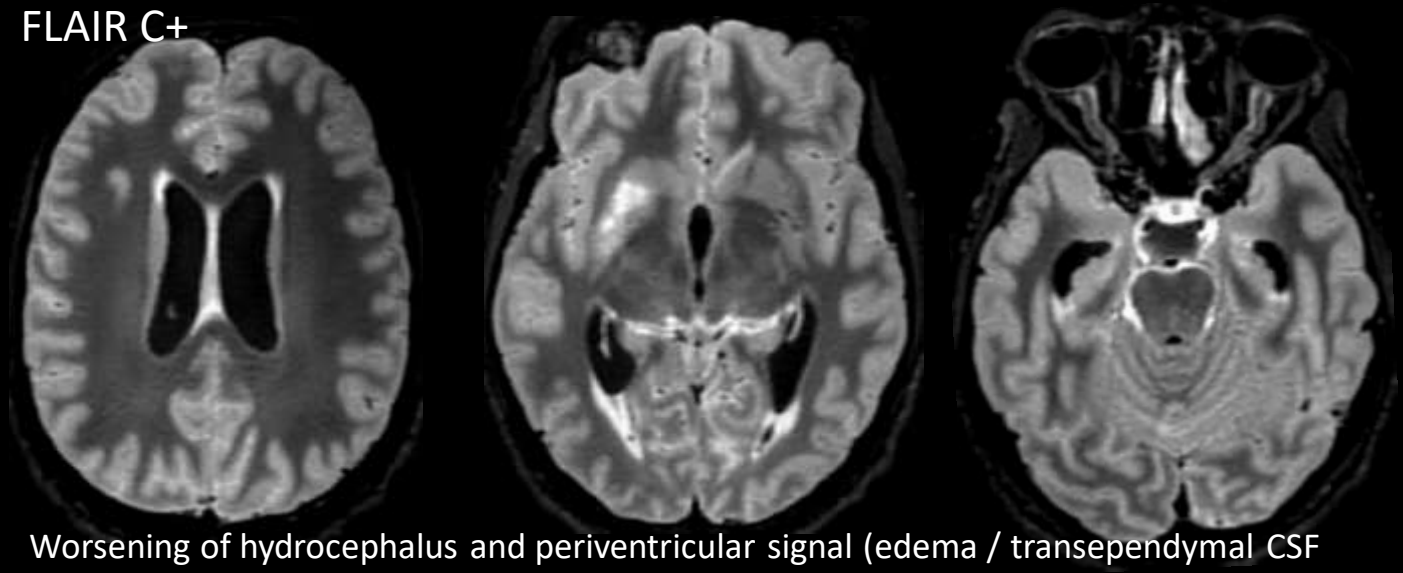
HEAD AND ANGIOMRI (11/23/23)

MIP ANGIOTOF



Focal narrowing of intracranial arteries, without hemodynamically significant stenosis or occlusion.

FLAIR C+



Worsening of hydrocephalus and periventricular signal (edema / transependymal CSF transudation).

COCCIDIOIDOMYCOSIS – DISCUSSION AND CONCLUSIONS

ETIOLOGY

Fungal infection by Coccidioides immitis or Coccidioides posadasii through inhalation of arthrospores of the fungus.

EPIDEMIOLOGY

- Endemic to arid regions of the Western Hemisphere

- California and northern Mexico: *Coccidioides immitis*
- Arizona, Utah, Nevada, Texas and Latin America: *Coccidioides posadasii*

- Risk: high exposure to dust
- The incidence increases with age, the majority > 40 years old / Men = women

MOST COMMON SIGNS/SYMPTOMS

Asymptomatic acute infection
Mild flu-like symptoms in some patients
Immunocompromised: risk of serious infection

- CNS involvement (Meningitis):

One of the most serious clinical manifestations is meningitis, a form of disseminated infection.
Symptoms with subacute or chronic onset
Most persistent headache with alarm signs.
Lumbar involvement: lumbosacral pain.

IMAGE

CT: discards hydrocephalus and intracranial hypertension
MRI: Normal
Signs of meningitis not specific for coccidioides meningitis
Complications.

FLAIR C+ and VWI C+ for meningeal assessment.

COMPLICATIONS

- Hydrocephalus is the most common (30-50%).
- Vasculitis and infarction may occur - due to inflammation of small and medium-sized vessels
- Cerebritis and abscess
- Adhesive arachnoiditis
- Syringomyelia
- Radioculapthy

Uncommon but more serious complication:

- Vertebral artery aneurysm.