

RAPIDLY PROGRESSIVE COCCIDIOIDES MENINGITIS IN A PATIENT WITH RHEUMATOID ARTHRITIS ON HUMAN INTERLEUKIN-6 (IL-6) RECEPTOR ANTAGONIST (SARILUMAB)

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INTRODUCTION:

- Risk of severe coccidioidomycosis in immunosuppressed patients can increase up to 150-fold¹
- Ongoing question is about the safety of biologic response modifiers (BRM) in coccidioidomycosis endemic regions²
- We present a case of severe, rapidly progressive **Coccidioides meningitis** in a patient who was treated with an anti-IL-6 receptor monoclonal antibody, sarilumab, for severe rheumatoid arthritis³

CASE DESCRIPTION:

66-year-old Hispanic woman, born in Mexico, moved to Tucson, Arizona 30 years ago, with medical history **rheumatoid arthritis** treated with sarilumab (IL-6 receptor antagonist) monotherapy since November 2019. In October, 2020 she developed mild SARS-CoV-2 infection which resolved without treatment or a chest X-ray. Subsequently, developed severe headaches, photophobia, nausea and vomiting, associated with a 20 pounds weight loss. Initial **brain MRI** on November 23 showed only diffuse mild cerebral volume loss. Despite symptomatic treatment, she showed minimal improvement. By January 2021, she had significant gait disturbance, dysarthria and refusal of oral intake.

Brain CT (**Image 1**) showed diffuse ventriculomegaly compatible with acute communicating hydrocephalus. Urgent Neurosurgical evaluation prompted external ventricular device (EVD) placement. Brain MRI now showed severe nodular leptomeningeal enhancement at the surfaces of the supra and infratentorial brain into the upper cervical spinal cord. Chest CT (**Image 2**) showed multiple scattered solid pulmonary nodules measuring up to 6 mm.

Image 1: Brain CT

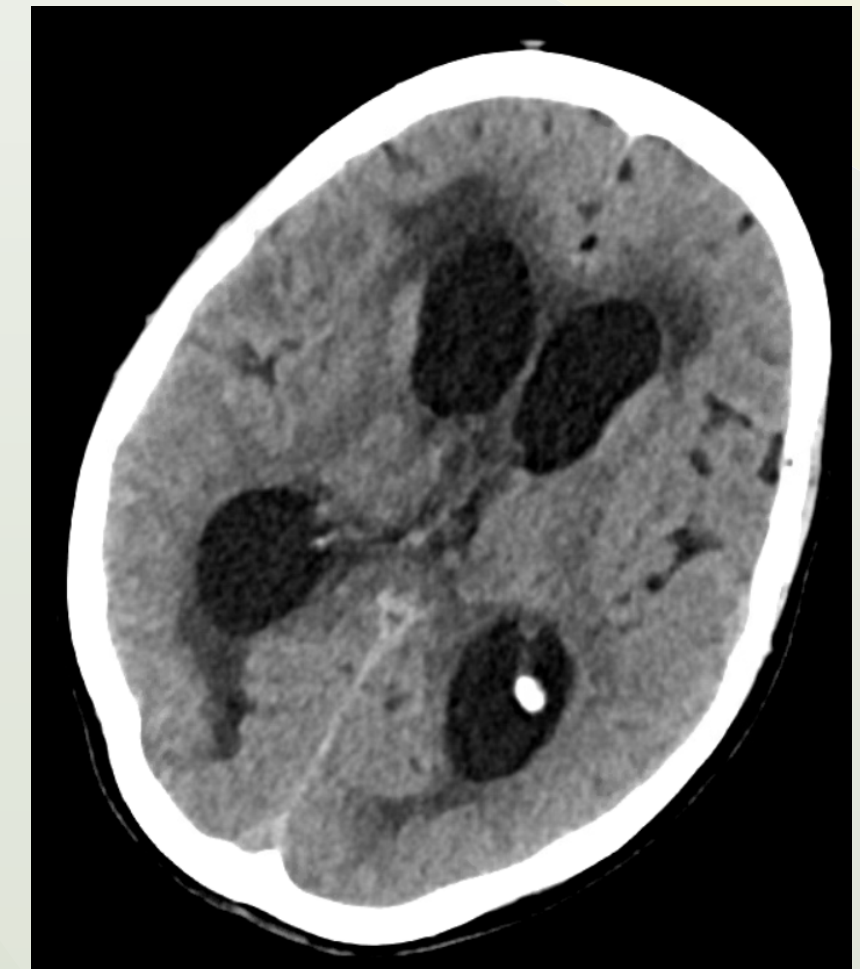
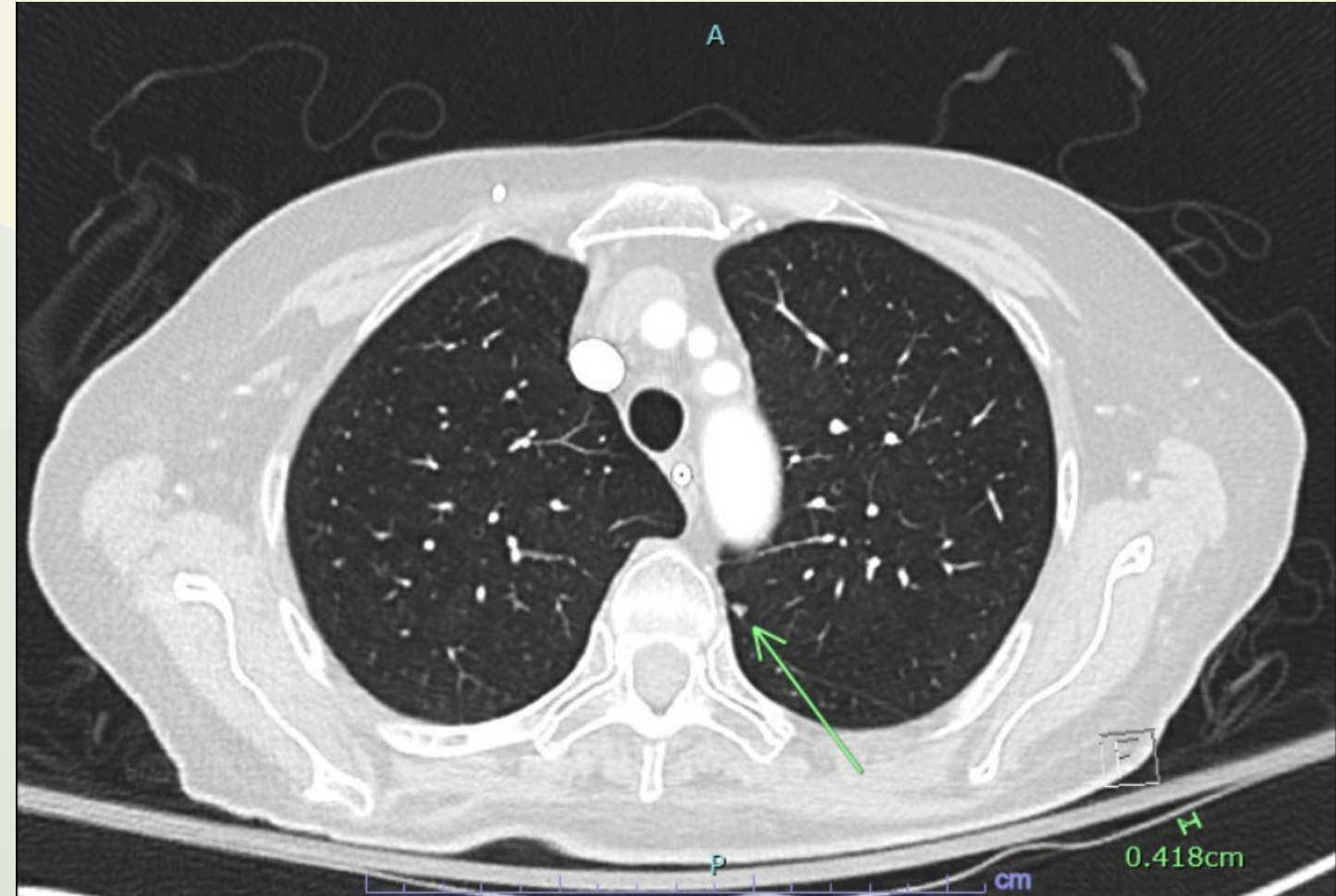


Image 2: Chest CT without contrast



All other studies were negative. She was started on fluconazole 400 mg daily. A permanent ventriculo-peritoneal shunt (VP) was placed and she entered rehabilitation.

CONCLUSIONS:

- Immunosuppression, including BRM, can either worsen the consequences of newly acquired coccidioidal infection or allow a latent coccidioidal infection to reactivate^{4,5}
- Rapidly progressive Coccidioides meningitis may be due to dysregulation of the IL-6 axis by sarilumab.
- Diagnosis of SARS-CoV-2 pneumonia shortly before the onset of her neurologic symptoms could be a confounding factor.
- Improvement in CSF analysis is probably due to difference in source (LP vs EVD) as fluconazole was only started a few days prior⁶
- IL-6 cytokine axis and its signals may be important for the control of *Coccidioides*.

LABORATORY RESULTS:

Table 1. Comparison of CSF results after fluconazole treatment

	Initial CSF (source: LP)	Follow up CSF (source: EVD)
WBC /mm³	60 (75% lymphocytes)	5 (65% lymphocytes)
Glucose mg/dl	25	58
Protein mg/dl	115.7	64

Table 2: Other serum and CSF serology results

CSF Coccidioides EIA IgG and Ag	Positive
Serum Coccidioides EIA (IgM and IgG)	Positive
Serum Coccidioides IMDF IgG	Positive
Serum Coccidioides Complement Fixation	<1:2

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