Cryptococcus Gattii: Disseminated Disease in an Immunocompetent Patient

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Introduction

- Disseminated Cryptococcal disease is caused by Cryptococcus gattii or Cryptococcus neoformans and primarily is seen in immunocompromised patients. However, immunocompetent patients are still at risk of infection which is more commonly caused by Cryptococcus gattii.

History of Present Illness

- A 41-year-old male with a PMH of cerebral palsy, hypertension, and seizure disorder who presents with a chief complaint of sore throat with associated altered mental status, shortness of breath, lethargy, general malaise, and decrease oral intake for one week.
- Vitals: : 37.2°C, HR 133 bpm, BP 151/115, SpO2 100%
- Initial physical exam was notable for dry mucus membranes and generalized weakness

Hospital Course

- Initial chest x-ray revealed left ovoid midlung opacity measuring 4 cm. CT soft tissue neck with contrast demonstrated multiple enhancing lesions within the visualized aspects of the brain including a 1.4 cm lesion in the right frontal lobe.
- Follow up CT chest with contrast showed a rounded mass within the left upper lobe measuring 3.3 cm correlated with CXR findings and was concerning for malignancy given presence of brain lesions.
- CT guided lung biopsy was positive for capsulated fungal organism, consistent with cryptococcus.
- Follow-up lumbar puncture with fungal culture was positive for cryptococcus Gattii. Repeat lumbar puncture following two weeks of antifungal treatment was sterile.

Images

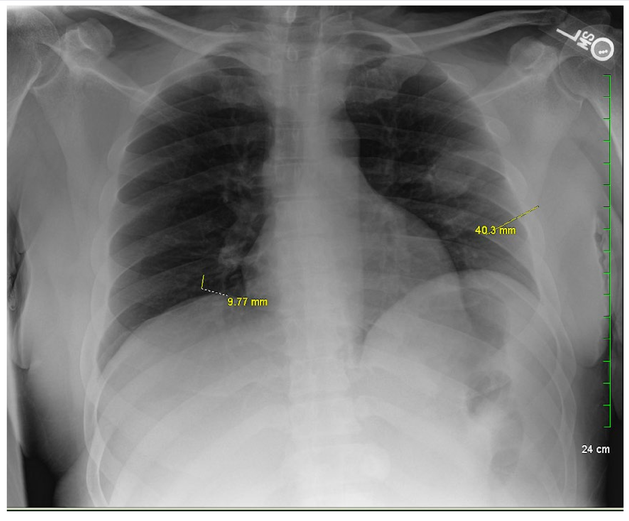

Fig. I: Chest x-ray on admission showing multiple lung lesions including 4 cm ovoid left midlung opacity and 1 cm nodularity involving the right lung base. Follow up imaging with Chest CT was recommended.

Images

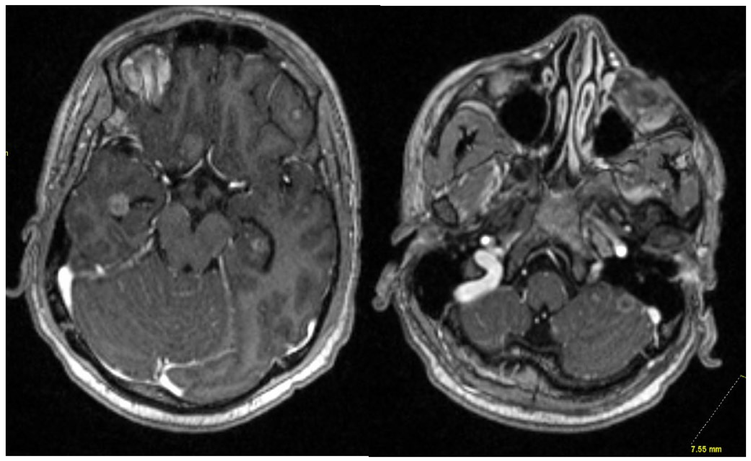

Fig II: Axial post contrast brain MRI images showing multiple enhancing supratentorial and infratentorial lesions.

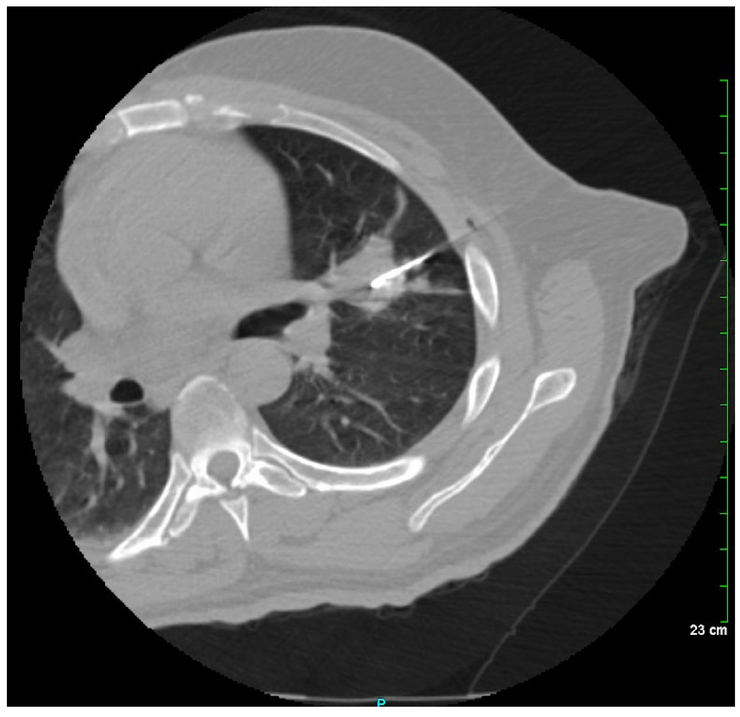

Fig. III: Axial imaging of CT-guided percutaneous lung biopsy of left upper lung mass. Pathology findings demonstrated capsulated fungal organism, consistent with cryptococcus.

Discussion

- Cryptococcal infections are primarily due to two main species which demonstrate different geographic distribution and patterns of disease. C. gatti is most prominent in the Pacific Northwest with several cases have been reported in other states, primarily Georgia.
- C. gatti is also seen to afflict both immunocompetent and immunocompromised patients in contrast to its counterpart, C. neoformans, which is typically seen in immunocompromised patients.
- On imaging evaluation, C. gatti more commonly forms cryptococcomas where as C. neoformans demonstrates disseminated disease.
- Brain imaging typically shows dilated perivascular spaces as infection spreads through Virchow-Robin spaces to deep brain structures.
- Chest imaging typically shows clustered pulmonary nodules that may be solid nodules, cavitary lesions, or ground glass opacities
- Treatment typically involves initial course of Amphoteracin B and Flucytosine for 4-6 weeks.
- Repeat lumbar puncture is performed every 2 weeks until a sterile culture is obtained.
- Patients may need therapeutic lumbar punctures or shunt placement due to increased intracranial pressure in cryptococcal meningitis.
- Lunger term maintenance therapy typically involved fluconazole for 12 months

Conclusion

Disseminated cryptococcus infection is usually the results of C. neoformams or C. gattii. These infections have variable imaging findings and a lumbar puncture or mass biopsy may be needed for confirmatory testing. Treatment involves 4-6 weeks of Amphotericin B and Flucytosine followed by 12 months of Fluconazole.

References

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