5-2020

Ventricular Entrapment Due To Isolated Intraventricular Aspergillus Infection

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Ventricular Entrapment Due To Isolated Intraventricular Aspergillus Infection

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Abstract

Purpose: Intraventricular aspergillus infections are a rare manifestation of fungal infections of the central nervous system (CNS) and have most commonly been identified in immunocompromised patients. Spread to the CNS can occur hematogenously (usually from pulmonary infection) or directly from the paranasal sinuses. Clinical diagnosis is difficult, as symptoms are nonspecific, but imaging can help create a more accurate differential. This poster describes a rare case of isolated intraventricular aspergillus infection in an immunocompromised patient presenting with ventricular entrapment.

Case Presentation: We present the case of a 59-year-old male with a history of renal transplant on immunosuppressive therapy presenting with right-sided weakness and speech difficulty. Of note, the patient had recently completed a 12-week course of antifungal therapy for acute invasive pulmonary aspergillosis. Imaging revealed a complex mass in the left lateral ventricle with ventricular entrapment. After placement of an external ventricular drain for hydrocephalus, surgical biopsy of the lesion demonstrated numerous uniform, septate, fungal hyphae with rare acute angle branching consistent with aspergillus.

Summary: Isolated intraventricular aspergillus infection is a rare manifestation of CNS fungal infection, most often seen in immunocompromised patients. Given the nonspecific clinical symptoms of this diagnosis, imaging can localize and narrow the vast differential for these CNS lesions. Diagnosed patients require immediate, long-term, and systemic antifungal therapy. Given the time sensitive nature of diagnosis for patient outcome, recognizing key imaging features early in the disease course is critical.

Background

- Intraventricular aspergillus infections are a rare manifestation of fungal infections of the central nervous system (CNS) and have most commonly been identified in immunocompromised patients.
  - Though intraventricular, and meningeal, involvement is rare, the brain itself is the second most commonly affected secondary site.
- Spread to the CNS can occur hematogenously (usually from pulmonary infection) or directly from the paranasal sinuses, after inhalation of airborne spores.
- Clinical diagnosis is difficult, as symptoms are nonspecific, but imaging can help create a more accurate differential.
  - Early detection is key, as mortality rates of cerebral aspergillosis approach 100% in immunocompromised patients.

Case Presentation

- We present the case of a 59-year-old male with a history of renal transplant on immunosuppressive therapy, presenting with a two-week history of right-sided weakness and speech difficulty.
  - Of note, patient was diagnosed with acute invasive pulmonary aspergillosis during a prior admission this year and had just completed a 12-week course of antifungal therapy. CT of the head at that time demonstrated only slight asymmetry of the ventricles without definite intracranial lesion.
  - Current non-contrast CT of the head demonstrated a complex cystic mass within the left lateral ventricle with asymmetric ventricular enlargement. Imaging revealed a complex mass in the left lateral ventricle with ventricular entrapment.
- After placement of an external ventricular drain for hydrocephalus, surgical biopsy of the lesion demonstrated numerous uniform, septate, fungal hyphae with rare acute angle branching consistent with aspergillus.
- Throughout the admission, there had been slow, but progressive, decline in neurological function. The patient has been continued on antifungal therapy.

Images

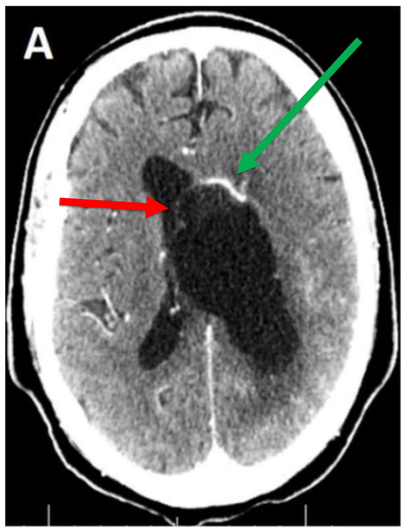

Figure A: Axial CT Head with contrast was performed immediately after initial non-contrast CT Head (*not shown*). The image demonstrates a complex lesion within the left ventricle (red arrow) with peripheral enhancement (green arrow) and enlargement of the left lateral ventricle.

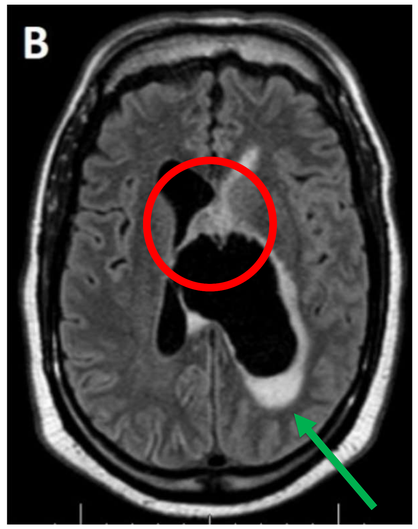

Figure B: Axial MR FLAIR sequence again shows a cystic lesion within the left lateral ventricle with a hyperintense FLAIR component (red circle). There is trapping of the posterior body of the left lateral ventricle with transependymal spread of CSF seen surrounding the expanded left lateral ventricle more posteriorly (green arrow).

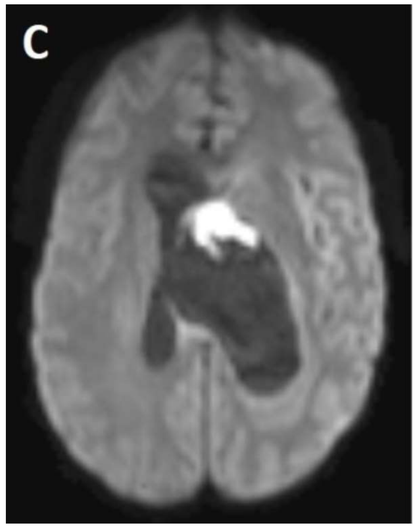

Figure C: Axial MR diffusion-weighted sequence demonstrates a region of homogenous restricted diffusion within the body of the left lateral ventricle corresponding to the location of the hyperintense FLAIR component.

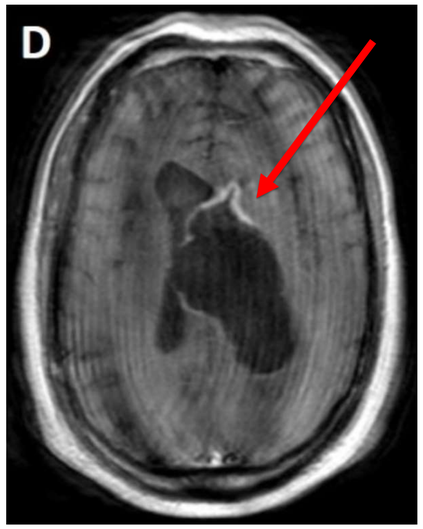

Figure D: Axial MR T1 post-contrast sequence demonstrates peripheral enhancement along the anterior margin (red arrow) of the hyperintense FLAIR lesion within the left lateral ventricle. Note that there is no internal enhancement identified within the lesion.

Discussion

- Aspergillus spores are commonly airborne and inhaled by the host, causing infection of the respiratory system.
- Aspergillus can gain access to the CNS via hematogenous spread or direct spread from the paranasal sinuses.
- Aspergillosis has a predilection for invasion of the walls of both small and large blood vessels, resulting in thrombosis and subsequent infarction and hemorrhage.
  - The organism can then spread beyond the vessel walls and form abscesses in the altered brain tissue.
- Isolated intraventricular aspergillus infection is a rare manifestation of CNS fungal infection, most commonly seen in immunocompromised patients.
- Given the nonspecific clinical symptoms of this diagnosis, imaging can localize and narrow the vast differential for these CNS lesions.
- Diagnosed patients require immediate, long-term, and systemic antifungal therapy. Given the time sensitive nature of diagnosis for patient outcome, recognizing key imaging features early in the disease course is critical.

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