

Early clinical observations in the fungal meningitis outbreak

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A new article being published early online in *Annals of Internal Medicine* describes the diagnosis and treatment protocol established in a Roanoke, Va. hospital to care for dozens of patients presenting with suspected fungal meningitis related to contaminated epidural spinal injections. This unprecedented surge of patients seeking care for a rare central nervous system (CNS) infection required physicians to react quickly with little data to guide treatment decisions. The authors suggest that the data collected from these cases may fill information gaps and inform current and future therapy for fungal meningitis patients.

Since early October, nearly 400 people nationwide have been diagnosed with [fungal meningitis](#) linked to contaminated injectable preservative-free methylprednisolone acetate used for epidural steroid injections and more than 14,000 people have been exposed. Currently, there are no clear recommendations for treatment. The Carilion Clinic in Roanoke saw half the fungal meningitis cases reported from Virginia and documented the clinical course.

The hospital established a hotline for patients concerned about infection. One-hundred-sixty-four patients presented to the emergency room and 133 met their exposure criteria for fungal meningitis due to the contaminated [epidural steroid injections](#). After screening using lumbar punctures, 25 patients were diagnosed with fungal meningitis and were managed by Infectious Diseases services, which continually sent data on these patients to the [Virginia Department of Health](#). An additional two patients presented to the hospital moribund following stroke, died, and

were diagnosed with fungal meningitis retrospectively.

All patients were treated with IV voriconazole at a dosage of 6 mg/kg every 12 hours and continued on this treatment, unless switched to IV amphotericin-B (if symptoms or side-effects warranted). Patients remained hospitalized until oral [voriconazole](#) was available for home therapy, and continue to be seen weekly in a pop-up "fungal meningitis clinic" within the Infectious Disease outpatient clinic.

Roanoke clinicians still have questions about the nature and course of this infection. There were two patients who had symptoms of infection, but had an initial negative screening result at lumbar puncture. They returned later with meningitis, suggesting that patients will need to be followed for an undetermined duration of time. Two other patients presented with stroke and quickly died, while three other patients developed stroke during treatment, leading researchers to suspect that *Exserohilum* is angio-invasive. Finally, the high number of patients complaining of "word searching" suggests that long-term neurological consequences should be a concern.

The authors of an accompanying commentary acknowledge the risks associated with diagnosis and treatment of this rare CNS infection. The authors note some of the pressing questions physicians face when patients present with exposure or suspected infection. With limited knowledge of this infection, clinicians must rely on quickly evolving practice recommendations being established by the CDC and others gaining first-hand experience with this outbreak. The CDC has convened a committee of "Clinical Mycology Expert Consultants" that will consult on these cases. In the meantime, they will continue to capture data to inform recommendations.

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