Clinical picture

CNS infection caused by *Pseudallescheria boydii* in a near-drowning traveller from a traffic accident

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A healthy 32-year-old backpacker experienced a motorcycle accident without helmet on a country road when he was travelling in Jiangxi Province, Eastern China. He fell into a roadside ditch and aspirated some polluted water. The traveller was rescued in a local hospital. The computer tomography of the skull showed multiple fractures (Figure 1A). A month later, his temperature rose to 39.1 °C, and headache got worse. He was transferred to the referral hospital and lumber puncture was performed. Analysis of the cerebrospinal fluid (CSF) showed an elevated white cells count and total protein level. Magnetic resonance imaging of the head revealed enhancement and thickening of the choroid plexus in the right lateral ventricle and the leptomeninges (Figure 1B and C).

A report from the microbiology laboratory was received on the seventh hospital day: the growth of filamentous fungi in the CSF-culture specimen. On the 21st hospital day, the specie of the fungus identified by polymerase chain reaction and rDNA internal transcribed spacer gene sequencing was received: *Pseudallescheria boydii*. Intravenous administration of voriconazole was begun. One week later, fever and headache alleviated obviously and the CSF tests were also improved. After 6 weeks, he was discharged and treated with oral voriconazole for next 9 months. Sixteen months after discharge, he recovered and returned to full-time employment.

Most studies of travel-related mortality report that road traffic crashes and drowning are the two foremost causes of traveller’s death, while near-drowning commonly appears as a cause of injury in non-fatal data. Near-drowning in polluted water people are at high risk for the development of infections as a result of aspiration of microorganisms. *Pseudallescheria boydii* and its anamorph or asexual state *Scedosporium apiospermum* have been recognized as the fungus most frequently involved in invasive disease after near-drowning.

![Figure 1](image-url)

(A) computerized tomography (CT) scan of the skull revealed multiple fractures of the skull. The three arrows point the fracture lines. (B and C) magnetic resonance imaging (MRI) of the Brain: T1 and T2-weighted images demonstrate enhancement and thickening of the choroid plexus in the right lateral ventricle and the leptomeninges. The arrow points the lesion and the abscess.
clinical signs and symptoms within a few days to several weeks after the incident, often after transient improvement of the patient’s condition. Central nervous system (CNS) infection may present as brain abscesses, meningitis, encephalitis and ventriculitis. *P. boydii* may be misidentified in the laboratory as *Aspergillus spp.* or other filamentous fungi by morphologic alone due to the similarities between these species, which can be problematic, as *P. boydii* is resistant *in vitro* to many antifungal agents, including amphotericin B and itraconazole. Currently implemented diagnostic means appear incapable of providing a rapid diagnosis while polymerase chain reaction (PCR)-based techniques would enable prompt identification of the fungus along with discovery of its origin. However, several reported cases of brain abscesses due to *P. boydii* or *S. apiospermum* infection were still lethal before voriconazole was wildly used. Voriconazole demonstrated clinically useful activity in the treatment of both *P. boydii* and *S. apiospermum* infections and was well tolerated. Prolonged treatment (>1 year) with voriconazole leads to resolution of brain and lung lesions in many cases. Awareness of this opportunistic infection after near-drowning could lead to prompt efforts for early diagnosis and effective treatment modalities to manage this life-threatening mycosis successfully in the certain traveller group.

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**References**