Voriconazole

Voriconazole, sold under the brand name Vfend among others, is an antifungal medication used to treat a number of fungal infections.

This includes aspergillosis, candidiasis, coccidioidomycosis, histoplasmosis, penicilliosis, and infections by Scedosporium or Fusarium. It can be taken by mouth or used by injection into a vein.

Common side effects include vision problems, nausea, abdominal pain, rash, headache, and seeing or hearing things that are not present.

Use during pregnancy may result in harm to the baby.

Fluconazole, voriconazole, and posaconazole cross the blood-brain barrier, but voriconazole is neurotoxic to cats. Liposomal and lipid-encapsulated formulations of amphotericin B are preferred ¹⁾.

It is in the triazole family of medications.

It works by affecting the cell membrane or affecting fungal metabolism.

Voriconazole was approved for medical use in the United States in 2002.

It is on the World Health Organization's List of Essential Medicines, the most effective and safe medicines needed in a health system.

Generic versions have been approved.

The wholesale cost in the United States, as of 2017, is about 14.86 USD per day.

Case series

Chakrabarti et al. reviewed 124 culture proven Cladophialophora bantiana brain abscess cases; 103 cases published in English literature during 1952 through 2014 and 21 unpublished cases from the Postgraduate Institute of Medical Education and Research, Chandigarh, India. The majority (57.3%) of the patients was from Asian countries especially from India (62/124, 50%). The diagnosis of the cases was delayed with mean duration 115 days after developing symptoms. The disease was nearly equally distributed in immunocompetent and immunosuppressed hosts but associated with significantly higher mortality (77.1%) in later group. Complete excision of brain lesion in immunocompetent host led to significantly better survival (43.7%). Though all commercially available antifungal drugs have been used in these patients, amphotericin B deoxycholate or lipid preparations were most commonly (62.83%) prescribed agent. None of the drugs used was found to be independently associated with improved outcome. In vitro antifungal susceptibility testing of 13 isolates of our center, demonstrated good activity to voriconazole, posaconazole, and itraconazole, but these triazoles were prescribed in only 29.2% patients. Increased awareness with early suspicion of the disease, and aggressive medical and surgical approach in treating these patients may improve the outcome ².

Scedosporium apiospermum is a fungus found in the soil and in contaminated water. Common cutaneous manifestations include Madura foot, a painless swelling on the sole of the foot. Invasive infection is usually associated with immunosuppression. The authors present a 16-month-old immunocompetent boy who had a near-drowning event. Following this, he was severely disabled with spastic quadriparesis. Early computerized tomography scans revealed diffuse hypoxic injury. Magnetic resonance images obtained 3 months after the initial event demonstrated multiple ring-enhancing lesions in the brain. Aspiration of the lesion was performed. Scedosporium apiospermum, the asexual form of Pseudallescheria boydii, was cultured. Conventional antifungal agents were commenced, with minimal effect. The child was subsequently treated with a new antifungal agent, voriconazole, a broad-spectrum triazole antifungal agent with good penetration into the cerebrospinal fluid. The patient improved, with a good radiological outcome and a moderate clinical outcome. The authors review the use of voriconazole for central nervous system infections and review the literature on S. apiospermum associated with near drowning ³.

Schwartz et al., evaluated, retrospectively, the outcome and survival of 81 patients who were treated with voriconazole for definite (n = 48) or probable (n = 33) CNS aspergillosis. Complete and partial responses were recorded in 35% of patients and varied by the underlying disease group: hematologic malignancies (54%), other underlying conditions (50%), chronic immunosuppression (45%), solid organ transplantation (36%), and hematopoietic stem cell transplantation (16%). Thirty-one percent of patients survived CNS aspergillosis for a median observation time of 390 days. There were 31 patients who underwent neurosurgical procedures, including craniotomy/abscess resection (n = 14), abscess drainage (n = 12), ventricular shunt (n = 4), and Ommaya-reservoir (n = 1). Multifactorial analysis revealed that neurosurgery was associated with improved survival (P = .02). Patients who underwent hematopoietic stem cell transplantation had a poorer survival (P = .02), but 7 (22%) of 32 survived for a median of 203 days. We conclude from this large cohort of patients that voriconazole treatment together with neurosurgical management, whenever feasible, is currently the best approach to treat patients with CNS aspergillosis ⁴.

Case reports

Nowak et al., present an immunocompetent 64-year-old patient presenting with an orbitofrontal invasive aspergillosis treated successfully with voriconazole monotherapy following biopsy and orbital decompression ⁵⁾.

Gonzales Zamora et al., present a case of post-surgical aspergillosis that occurred after the resection of acoustic neuroma in an immunocompetent patient. Imaging revealed leptomeningeal enhancement and a cerebellar extra-axial fluid collection adjacent to the right retrosigmoid craniotomy. The patient was taken to the operating room for debridement, where purulent fluid was obtained from subdural space. The diagnosis was achieved by histopathology and polymerase chain reaction (PCR) in brain tissue. Appropriate investigations failed to detect contamination in the operating room. The patient was successfully treated with 3 months of voriconazole. We highlight the importance of recognizing this uncommon complication and advocate for the use of molecular techniques to improve the diagnostic yield in central nervous system aspergillosis ⁶.

2017

A 55-year-old diabetic male presented with severe headache, blurred-vision, behavioural abnormalities, eye-pain and ear-discharge. He was undergoing treatment for hypertension, prostatomegaly and obstructive pulmonary disease. He was on steroids for the past six years for uveitis. Haematology reports indicated elevated WBC and platelet count. He was negative for HIV, hepatitis, autoimmune antibodies and tumour markers. CD4 count was within normal limits. Brain magnetic resonance imaging revealed multiple ring-enhancing lesions and oedema in the left tempero-parietal region. Chest X-ray showed irregular consolidations in right paracardiac region and confluence in both lungs. Positron Emission Tomography of whole body revealed multiple lesions in brain, lungs, lymph nodes and C3-vertebrae. Histopathology of the lung lesion showed nontuberculous infectious pathology and brain lesions showed necrosis with occurrence of pigmented hyphal fungi. The pus aspirated during surgical excision of brain lesions grew black mold, identified as C. bantiana. Although patient was started on intravenous Voriconazole, he succumbed to the infection after 7 days. The lesion was initially suspected to be of tuberculous etiology, and the lesions in lungs were also suggestive of malignancy, which was however ruled out by histopathological examination. Such diagnostic dilemmas are common in the infection caused by Cladophialophora, which can cause treatment delay and death. Early diagnosis is therefore mandatory for the rapid treatment and survival of patients ⁷⁾.

A 27 year-old male patient presenting without any chronic disease was admitted to the emergency department of our hospital with the complaints of persistent headache and diplopia. Magnetic resonance imaging (MRI) showed a space-occupying lesion in the right parietal lobe and left frontal lobe. Brain abscess was diagnosed in the patient who was referred to the neurosurgery department. Treatment was initiated with ceftriaxone and metronidazole. The abscess material sent for direct microscopic examination in the mycology laboratory was stained with Gram and Giemsa and cultured in the Sabouraud dextrose agar medium (SDA) with and without antibiotics (cycloheximide and chloramphenicol). Then, it was incubated at 37°C and 25°C. Direct examination and staining revealed a septate hyphae. The patient who received liposomal amphotericin B was referred to the infectious diseases department. Surface colors of all media including SDA with cycloheximide were olive-gray to black and contained velvety colonies. Lemon-like very long and integrated chains of conidium with poor branching in cornmeal Tween 80 agar, as well as growth at 42°C in passages, positive urease test result and cycloheximide resistance suggested C.bantiana. The isolate was confirmed as C. bantiana based on its DNA sequence analysis. Minimum inhibitor concentration (MIC) values for amphotericin B, voriconazole, caspofungin, and posaconazole were 2 µg/ml, 0.03 µg/ml, 0.03 µg/ml and 0.03 µg/ml, respectively. Liposomal amphotericin B was replaced with voriconazole due to the antifungal susceptibility profile. The patient who was symptom-free was discharged at 24 days after hospitalization with oral voriconazole treatment. In conclusion, cerebral phaeohyphomycosis should be considered in immunocompetent individuals. Given the fact that early diagnosis saves lives, such specimens should promptly be sent for mycological analysis⁸⁾.

A case of multiple brain abscesses caused by C. bantiana in an immune competent patient. The diagnosis was based on CT scan of head, direct examination and culture of the aspirate from the abscess. Despite complete surgical resection of the abscesses and antifungal therapy with amphotericin B and voriconazole the patient could not be saved. All the cases of cerebral phaeohyphomycosis due to this rare neurotropic fungus reported from India between 1962 and 2009

have also been reviewed ⁹⁾.

A report on a cerebral infection by Pseudallescheria boydii in a 21-month-old boy after a neardrowning episode. MRI revealed multiple (> 60) intracerebral abscesses.

The surgical therapy included CSF drainage and microsurgical resection of one abscess for microbiological diagnosis. Antimycotic therapy included terbinafine and intraventricular caspofungin in addition to voriconazole.

Systemic side effects of chemotherapy were not observed. After placement of a ventriculoperitoneal shunt, the boy was transferred to a rehabilitation clinic and improved neurologically. After 20 months, MRI documented a continuing remission of the disease.

The case proves that an aggressive treatment should be undertaken and can be successful in CNS pseudallescheriasis ¹⁰⁾.

Lyons et al.report the first successfully treated case of Cladophialophora bantiana cerebral abscess with the relatively new antifungal agent voriconazole. Infection with this organism is often fatal. A 64year-old man presented to our institution with progressive neurologic symptoms due to a brain abscess. A stereotactic brain biopsy confirmed the pathogen as C. bantiana. We discuss the successful treatment of this patient, and review the pharmacological actions of voriconazole and the literature on the treatment of this organism. Previously considered a rare cause of cerebral abscess, C. bantiana fungal infections have become more common in recent years. Aggressive and continuous treatment with voriconazole may offer an improved chance of survival in these patients ¹¹.

A report is also the first to describe the use of the new antifungal agent voriconazole. In treating a case of chronic vertebral osteomyelitis, several principles are emphasized from both the surgical and medical perspectives. From a surgical perspective, the use of salvage surgery, temporary avoidance of spinal instrumentation, and an appropriate choice of graft materials are emphasized. From a medical perspective, confirmation of the diagnosis, the need for long-term antifungal therapy, the need for long-term patient compliance, and the use of the new antifungal agent voriconazole are emphasized. Application of these principles has led to an adequate 2-year outcome ¹².

A cerebral cryptococcoma in a chronic nephropathic HIV-negative subject with homocystinuria, completely cured with neurosurgery and voriconazole after fluconazole failure, is described ¹³.

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Bentley RT, Taylor AR, Thomovsky SA. Fungal Infections of the Central Nervous System in Small Animals: Clinical Features, Diagnosis, and Management. Vet Clin North Am Small Anim Pract. 2018 Jan;48(1):63-83. doi: 10.1016/j.cvsm.2017.08.010. Epub 2017 Oct 6. Review. PubMed PMID: 28988704.

Chakrabarti A, Kaur H, Rudramurthy SM, Appannanavar SB, Patel A, Mukherjee KK, Ghosh A, Ray U. Brain abscess due to Cladophialophora bantiana: a review of 124 cases. Med Mycol. 2016

Feb;54(2):111-9. doi: 10.1093/mmy/myv091. Epub 2015 Oct 18. Review. PubMed PMID: 26483430.

Chakraborty A, Workman MR, Bullock PR. Scedosporium apiospermum brain abscess treated with surgery and voriconazole. Case report. J Neurosurg. 2005 Jul;103(1 Suppl):83-7. Review. PubMed PMID: 16122011.

Schwartz S, Ruhnke M, Ribaud P, Corey L, Driscoll T, Cornely OA, Schuler U, Lutsar I, Troke P, Thiel E. Improved outcome in central nervous system aspergillosis, using voriconazole treatment. Blood. 2005 Oct 15;106(8):2641-5. Epub 2005 Jul 5. PubMed PMID: 15998833.

Nowak S, Bollmann T, Rosenstengel C, Rathmann E, Ribback S, Ewert R, Schroeder HWS. Voriconazole as mono-therapy in orbitofrontal erosive aspergillosis without gross total resection: A case report and review of literature. Clin Neurol Neurosurg. 2018 Jul 2;172:93-95. doi: 10.1016/j.clineuro.2018.06.043. [Epub ahead of print] PubMed PMID: 29986203.

Gonzales Zamora JA, Henry Z, Gultekin SH. Central Nervous System Aspergillosis: An Unexpected Complication following Neurosurgery. Diseases. 2018 May 31;6(2). pii: E46. doi: 10.3390/diseases6020046. PubMed PMID: 29857501; PubMed Central PMCID: PMC6023335.

Lahiri Mukhopadhyay S, Mahadevan A, Bahubali VH, Dawn Bharath R, Prabhuraj AR, Maji S, Siddaiah N. A rare case of multiple brain abscess and probably disseminated phaeohyphomycosis due to Cladophialophora bantiana in an immunosuppressed individual from India. J Mycol Med. 2017 May 3. pii: S1156-5233(16)30233-5. doi: 10.1016/j.mycmed.2017.04.002. [Epub ahead of print] PubMed PMID: 28478966.

Atalay MA, Koç AN, Koyuncu S, Ulu Kiliç A, Kurtsoy A, Alp Meşe E. [Cladophilaphora bantiana brain abscess treated with voriconazole in an immunocompetent patient]. Mikrobiyol Bul. 2014 Jul;48(3):501-6. Turkish. PubMed PMID: 25052118.

Suri P, Chhina DK, Kaushal V, Kaushal RK, Singh J. Cerebral Phaeohyphomycosis due to Cladophialophora bantiana - A Case Report and Review of Literature from India. J Clin Diagn Res. 2014 Apr;8(4):DD01-5. doi: 10.7860/JCDR/2014/7444.4216. Epub 2014 Apr 15. PubMed PMID: 24959445; PubMed Central PMCID: PMC4064842.

Mursch K, Trnovec S, Ratz H, Hammer D, Horré R, Klinghammer A, de Hoog S, Behnke-Mursch J. Successful treatment of multiple Pseudallescheria boydii brain abscesses and ventriculitis/ependymitis in a 2-year-old child after a near-drowning episode. Childs Nerv Syst. 2006 Feb;22(2):189-92. Epub 2005 Apr 30. PubMed PMID: 15864705.

Lyons MK, Blair JE, Leslie KO. Successful treatment with voriconazole of fungal cerebral abscess due to Cladophialophora bantiana. Clin Neurol Neurosurg. 2005 Oct;107(6):532-4. Epub 2005 Jan 13. PubMed PMID: 16202830.

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German JW, Kellie SM, Pai MP, Turner PT. Treatment of a chronic Scedosporium apiospermum vertebral osteomyelitis. Case report. Neurosurg Focus. 2004 Dec 15;17(6):E9. Review. PubMed PMID: 15636579.

Sabbatani S, Manfredi R, Pavoni M, Consales A, Chiodo F. Voriconazole proves effective in long-term treatment of a cerebral cryptococcoma in a chronic nephropathic HIV-negative patient, after fluconazole failure. Mycopathologia. 2004 Aug;158(2):165-71. PubMed PMID: 15518344.

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