CASE REPORT

Antifungal therapy and surgical drainage for the treatment of a cerebral abscess caused by *Scedosporium apiospermum* in a renal transplant patient - a case report [version 1; peer review: 1 approved, 1 approved with reservations]

Maria Isabel Garzón, Claudio Abiega, Abel H. Zarate, Pablo E. Sanchez, Marcela F. Medeot, Carlos Chiurchiu, Jorge de La Fuente, Juan Pablo Caeiro

Department of Medicine, Hospital Privado de Córdoba S.A., Córdoba, X5002IRA, Argentina

**Abstract**

*Scedosporium apiospermum*, the asexual form of *Pseudallescheria boydii*, is a filamentous, opportunistic fungus which can be found in environmental sources all over the world. It is a human pathogen mostly associated with lung, bone and joint infections and less frequently with infections of the central nervous system (CNS). The latter is generally related to the patient’s immune state, and occurs most frequently in immunocompromised patients. We present the case of a 64-year-old male patient with a background of chronic kidney failure secondary to nephroangiosclerosis and a renal transplantation who presented with left-sided hemiplegia and dysarthria. A brain MRI revealed a hyperintense lesion with ring enhancement at the right paramedian posterior frontal subcortical area with an associated vasogenic edema. A stereotactic biopsy of the lesion revealed the presence of *S. apiospermum*. The patient received a combined therapy of voriconazole and terbinafine with surgical drainage, which led to temporarily clinical and radiological improvement.

**Keywords**

*Scedosporium apiospermum*, *Pseudallescheria boydii*, cerebral abscess, kidney transplant

**Corresponding author:** Juan Pablo Caeiro (jpcaiero3@gmail.com)

**Competing interests:** No competing interests were disclosed.

**Grant information:** The author(s) declared that no grants were involved in supporting this work.

**Copyright:** © 2014 Garzón MI et al. This is an open access article distributed under the terms of the Creative Commons Attribution Licence, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited. Data associated with the article are available under the terms of the Creative Commons Zero "No rights reserved" data waiver (CC0 1.0 Public domain dedication).

**How to cite this article:** Garzón MI, Abiega C, Zarate AH et al. Antifungal therapy and surgical drainage for the treatment of a cerebral abscess caused by *Scedosporium apiospermum* in a renal transplant patient - a case report [version 1; peer review: 1 approved, 1 approved with reservations] F1000Research 2014, 3:70 (https://doi.org/10.12688/f1000research.3535.1)

Introduction

_Scedosporium apiospermum_ is a filamentous fungus causing a rare but serious opportunistic infection. It is the asexual form of _Pseudallescheria boydii_ and is found in many environmental sources including soil and fresh water, but most commonly in stagnant or contaminated water. The infection may be acquired by inhaling the microorganism or after traumatic inoculation through the skin. The sites of infection include the lungs, sinuses, bones, skin, joints and notoriously, the central nervous system (CNS). _S. apiospermum_ can infect the CNS of both healthy and immunocompromised hosts. Cerebral abscess is the most common clinical manifestation of _S. apiospermum_ brain infections, although cases of meningitis and, less frequently, ventriculitis have also been reported. Brain abscesses may be found as one or multiple lesions. The overall mortality rate of patients infected with this pathogen is higher than 70%.

Solid organ transplant and its associated immunosuppression are important risk factors for infections with _Scedosporium_ species. Here we present a case of CNS infection caused by _S. apiospermum_ in a patient who had received a kidney transplant and was treated with dual antifungal therapy and surgical drainage. The patient initially responded well to the therapy.

Clinical case

A 64 year-old male patient underwent deceased-donor kidney transplantation following a chronic kidney failure secondary to nephroangiosclerosis. The past medical history was significant for hypertension, hyperlipidemia, peripheral vascular disease, chronic anemia and deep venous thrombosis of right lower extremity. Family history was significant for cardiomyopathy in one brother and diabetes in another. The immunosuppressive medication consisted of tacrolimus 3 mg every 12 hours, prednisone 20 mg daily and mycophenolate mofetil 500 mg every 12 hours. Seventeen days after transplantation, he presented left-sided hemiplegia and dysarthria. A brain MRI was performed, which revealed a hyperintense lesion with ring enhancement at the right paramedian posterior frontal subcortical area with an associated vasogenic edema (Figure 1).

A stereotactic biopsy was performed and tissue examination revealed the presence of a filamentous fungus that was identified as _S. apiospermum_ (Figure 2). The sample was also cultured in Sabouraud’s dextrose agar medium at 25°C for a period of 14 days (Figure 3), the culture turned a dark brown color.

The patient started a treatment with voriconazole (6 mg/Kg po q12h for two days, then 4 mg/Kg q12h VO) and terbinafine (250 mg po daily) and subsequently was subjected to surgical drainage by craniotomy in order to remove the infected tissue.

The patient was on terbinafine for 4 months and continued to be on voriconazole for almost a year. At a follow up visit he showed significant recovery from the left-sided palsy and also an absence of dysarthria. The brain MRI follow-up images showed an improvement in the brain lesion.

Unfortunately, 8 months later the patient clinical course was complicated and he eventually died of problems unrelated to fungal CNS disease.
Discussion
Solid organ transplant recipients are highly susceptible to invasive fungal infections.

During the last few decades there has been a marked increase in the number of immunocompromised patients who have suffered *Scedosporium* infections, the most frequent cases being infections of the CNS. If not adequately treated, fungal brain abscesses in immunocompromised patients often result in poor prognosis. The diagnosis of an invasive fungal infection such as *S. apiospermum* is based on the combination of histopathological, microbiological and clinical findings. As the clinical and histopathological presentations of *S. apiospermum* infections are similar to those of other fungi such as *Aspergillus* and *Fusarium* spp., a culture is necessary for accurate diagnosis. Furthermore, while most species of *Aspergillus* (except for *A. terreus*) are sensitive to amphotericin, *S. apiospermum* is usually resistant. In addition, PCR techniques are important to diagnose as well as to distinguish between different species.

There are many treatment options described in the literature, but there is an ongoing controversy over which treatment is most suitable for *S. apiospermum* infections. Voriconazole has emerged as a possible treatment option, since it shows high activity against several species of fungi, including *S. apiospermum*. Several reports have shown the successful use of voriconazole synergistically combined with terbinafine against *S. apiospermum* and *S. prolificans*. Furthermore, many authors recommend the surgical drainage of brain abscesses caused by *S. apiospermum*. Therefore, a combined antifungal therapy along with an aggressive surgical approach is recommended for therapeutic success.

Conclusion
*S. apiospermum* infection of the CNS is a rare but it is an extremely serious medical condition. Immediate diagnosis in the event of brain abscess in an immunocompromised patient is crucial and the choice of a suitable medical treatment is a priority. Despite the aggressive surgical treatment and the appropriate anti-fungal therapy used, mortality rates continue to be high.

Consent
Written informed consent for publication of clinical details and clinical images was obtained from the patient’s family.

Author contributions
MIG, PES and JPC contributed to the design of the study. All the authors contributed to writing the manuscript and agreed to the final contents.

Competing interests
No competing interests were disclosed.

Grant information
The author(s) declared that no grants were involved in supporting this work.

References


Open Peer Review

Current Peer Review Status: ✔️ ?

Version 1

Reviewer Report 02 July 2015

https://doi.org/10.5256/f1000research.3786.r4590

© 2015 Roilides E. This is an open access peer review report distributed under the terms of the Creative Commons Attribution Licence, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Emmanuel Roilides
Department of Pediatrics, Aristotle University of Thessaloniki, Thessaloniki, Greece

This is an interesting rare case of brain abscess due to Scedosporium apiospermum in a kidney transplant immunocompromised patient, indeed relatively early (17 days) post-transplantation. The report reads nicely and the Discussion is thoughtful. However, there are a few points that the authors should take into consideration:

1. Have the authors performed an antifungal susceptibility testing? In addition, any molecular identification? It is apiospermum complex now.


3. Page 2. VO should be po

Competing Interests: No competing interests were disclosed.

I have read this submission. I believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard, however I have significant reservations, as outlined above.

Reviewer Report 03 June 2014

https://doi.org/10.5256/f1000research.3786.r4093

© 2014 Girmenia C. This is an open access peer review report distributed under the terms of the Creative Commons Attribution Licence, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.
Corrado Girmenia
Department of Hematology, Sapienza University of Rome, Rome, Italy

This is an interesting case report of an unusual fungal infection in an immunocompromised patient. The methodology in the diagnostic approach and the description of the case are both adequate.

**Competing Interests:** No competing interests were disclosed.

I have read this submission. I believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard.