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Case Report
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Post-Traumatic Skin Lesion Caused by Scedosporium Apiospermum in an Immunocompetent Patient: Case Report

*Francisco Javier García García, Íñigo Crespo Cullel, Samuel López Alonso, Carlos Cano Gala, Juan Jiménez Viseu Pinheiro and Juan Francisco Blanco**

Department of Orthopedic Surgery and Traumatology, University Hospital of Salamanca, Spain

Abstract

Scedosporium apiospermum is a saprophytic filamentous fungus that can cause infections of the skin, respiratory system, central nervous system, and bones. It affects mainly to immunosuppressed patients, but also and more rarely to immunocompetent patients. In these cases the organisms typically cause acute inflammation of the dermis or subcutaneous tissues, with erythema, subcutaneous nodules, and ulcer formation. The early diagnosis for this fungus is essential and voriconazole is an effective antifungal treatment, together with aggressive cleaning and surgical debridement. We report a *S. apiospermum* infection in a 77-year-old man who suffered a rabbit scratch in his left hand.

Keywords: *Scedosporium apiospermum*; Immunocompetent; Voriconazole

Introduction

Scedosporium apiospermum is a species of filamentous fungus that can be found in wastewater and contaminated water, soil and plants. It can cause infections, mainly in immunosuppressed patients, in whom it leads to systemic infections, but also in immunocompetent patients, in whom the condition usually has a traumatic origin and a localized nature, such as an area of tumescent or suppurating skin. It can also appear as septic arthritis or osteomyelitis. To the best of our knowledge, there are 36 cases of musculoskeletal infections caused by the *Scedosporium* genus in immunocompetent patients described in the literature, and only 8 cases of infection caused by *S. Apiospermum*.

Case Presentation

The patient is a 77-year-old man who was admitted with symptoms of 2 weeks of evolution including pain, inflammation and secretion of a clear yellowish liquid on the back of his left hand caused by a rabbit scratch. The skin looked thin and atrophic. No fever or regional adenopathies were observed and the general examination was normal. The analytical values showed leukocytes: 16.5 × 10^9/L (neutrophils: 93.8%; lymphocytes: 3.6%; monocytes: 2.4%); PCR: 7.92 mg/dL; hematocrit: 37.5%; hemoglobin: 12.7 g/dl; all other values within normal parameters. X-rays of the thorax and the upper left limb were normal. At first the wound and the suppurating point were debrided, and afterwards the patient received oral antibiotic treatment with amoxicillin/clavulanic acid 500 mg/125 mg for 7 days. After the end of the treatment the patient showed a torpid evolution with an increase in the cellulitis symptoms that already spread to the proximal area of the forearm, a restart of suppuration and general worsening. In view of this situation, the surgical debridement of the entire area of the back of the hand was decided, including the scratched and the suppurating area. A remarkable inflammation of the subcutaneous tissue, fascia and peritendinous area of the extensor apparatus was observed (Figure 1); the inflammatory tissue was excised and samples were obtained for culture. An empirical intravenous antibiotic treatment was administered with clindamycin 600 mg/8 h and ciprofloxacin 400 mg/12 h. An improvement was observed during the first days of admission of the patient, without fever and with analytical values of leukocytes: 14.5 × 10^9/L and PCR: 4.52 mg/dL. Finally, a positive culture is isolated for one fungus species: *Scedosporium Apiospermum*, in an analysis which included bacteriology. Tularemia and serology were negative. Treatment was started with an initial perfusion of 600 mg of intravenous voriconazole in the first 24 h and a maintenance dose of 200 mg every 12 h. The surgical wound had already begun to show a

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Correspondence:
Juan Francisco Blanco, Department of Orthopedic Surgery and Traumatology, University Hospital of Salamanca, Salamanca, Spain, E-mail: juanfblanco@telefonica.net

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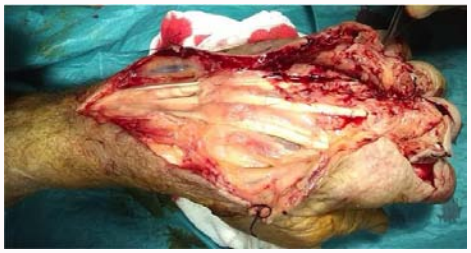

Figure 1: Intraoperative image showing inflammatory subcutaneous tissue, fascia and extensor tendons.

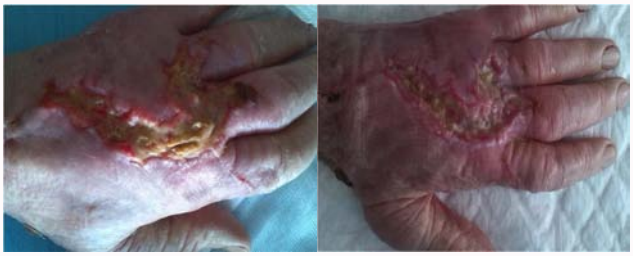

Figure 2: Torpid evolution of surgical wound over several days.

necrotic, edematous and sloughing tissue (Figure 2) which required a new surgical debridement with wide cleaning, which in turn required a radial flap and a graft from the thigh to compensate for the skin loss on the back of the hand. From that point on, the patient showed good evolution of his wounds and of the flap with no secondary effects to voriconazole. In the microbiological study, fragments of the synovial membrane and the fascia were cultured in different media: ram blood agar at 5%, MacConkey agar, Chapman agar and thioglycollate broth. The incubation temperature was 37ºC, and fungal growth was detected after approximately 72 h, when whitish colonies with aerial mycelium could be observed. The microscopic study of the colonies revealed the existence of hyaline hyphae, walled, with unicellular ovoid annelloconidia, which were classified as *S. apiospermum*.

Discussion

Fungal skin infections may be caused by a wide variety of species of fungi, mainly from the genus *Aspergillus*, followed by *Fusarium* and *Scedosporium*. The infectious process frequently affects the skin and subcutaneous tissue, but it can spread to the fascia and the muscle, or even to the bone. Clinically, the lesion starts as a tumor or purulent nodule which may become a papillomatous tumor and be ulcerated (mycetoma) [1]. In immunosuppressed patients, this involvement may be systemic and colonize the lungs, the brain, etc., and in some cases they may even follow a fatal course. However, in immunocompetent patients the portal of entry is usually traumatic. Wastewater, soil and certain plants are common causes, and the infection is inoculated through an open wound, a scratch, or the accidental consumption of contaminated water. There are cases described in the literature of primary infection with *S. Apiospermum* after the tsunami in 2004 in Indonesia, in people who breathed in contaminated water [2]. Although *S. Apiospermum* is a rare organism, and even more so in immunocompetent patients, we may be facing an emerging microorganism we should be alert to, and which should be suspected in certain cases with traumatic background and production mechanisms. A quick diagnosis is essential, because it will prevent a larger cleaning surgery or a possible systemic dissemination and/or death. Likewise, this is a slowly growing fungus with regard to diagnosis, although there are some promising data for the quick diagnosis of this mycosis through PCR molecular techniques in blood, serum and tissue samples [3]. The treatment of these infections poses a challenge in many cases, and it is complex in nature. The early diagnosis for this fungus is essential due to the multiple resistances that it presents against many antifungal agents, such as amphotericin B, fluconazole, miconazole, etc. Due to the rare nature of this infection there are no randomized prospective studies which compare different antifungal agents or establish the duration of treatment. Surgical debridement, and in some cases even amputation [4], have been therapeutic approaches that have been applied in many occasions, particularly in children. Voriconazole is a broad-spectrum triazole antifungal medication which is effective against different species of *Aspergillus*, *Fusarium* and *Scedosporium*. It can be administered intravenously or orally, with excellent bioavailability. Until now, different *in vitro* studies have shown a clear response of *Scedosporium spp*. to Voriconazole [5], and this was recently corroborated in a study [6] in which its effectiveness was assessed in 107 cases of invasive scedosporiosis. In general terms, our patient required more than one surgical debridement, but he showed good response once that the therapy with voriconazole started, with no secondary effects or evidence of recurrence over time.

Conclusion

S. Apiospermum represents a rare organism, and even more so in immunocompetent patients. Based on our limited experience, a long treatment with voriconazole may be considered a good antifungal approach, together with aggressive cleaning and surgical debridement. Therefore, it would be necessary to carry out clinical trials with which the dose and duration of the treatment could be established, because there are no specific references in the literature.

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