



## A Case of Localized Cutaneous Infection Caused by *Scedosporium apiospermum* Presenting as Cellulitis

Soo Hyeon Noh, Ga Hye Na, Kun Park, Eun Jung Kim

Department of Dermatology, Wonkwang University School of Medicine, Iksan, Korea

Dear Editor:

*Scedosporium apiospermum* is a rare, opportunistic fungal pathogen. There are two types of cutaneous infections: mycetomas and localized skin infections without grain production. Localized skin infections are much rarer than mycetomas<sup>1</sup>.

An 80-year-old woman presented with painful, purpuric swelling on the dorsum of her foot (Fig. 1A). She did not have any systemic disease other than hypertension, and she was not on any medication impairing her immunity. She had undergone needle aspiration therapy, for a 0.5 cm pustule on her right first toe in July 2015. After 1 week, she developed painful swelling over the dorsum of her foot and visited Wonkwang University Hospital.

Laboratory tests showed elevated leukocyte counts. Histopathological analysis of a skin biopsy specimen revealed diffuse inflammation indicated by the presence of neutrophils in the dermis and subcutaneous fat (Fig. 2A). However, Periodic acid Schiff staining did not reveal fungal hyphae. Accordingly, she was admitted under the suspicion of cellulitis. We initiated empirical first-generation cephalosporin, but the lesion did not improve; instead, pustules started developing. Fungal culture of the pustules revealed velvety, grayish-white colonies on the surface of a Sabouraud agar plate (Fig. 2B). Upon lactophenol cotton blue staining, the fungi showed single ovoid conidia, borne laterally or terminally on conidiophores (Fig. 2C). The isolate was identified as *S. apiospermum*; the nucleo-



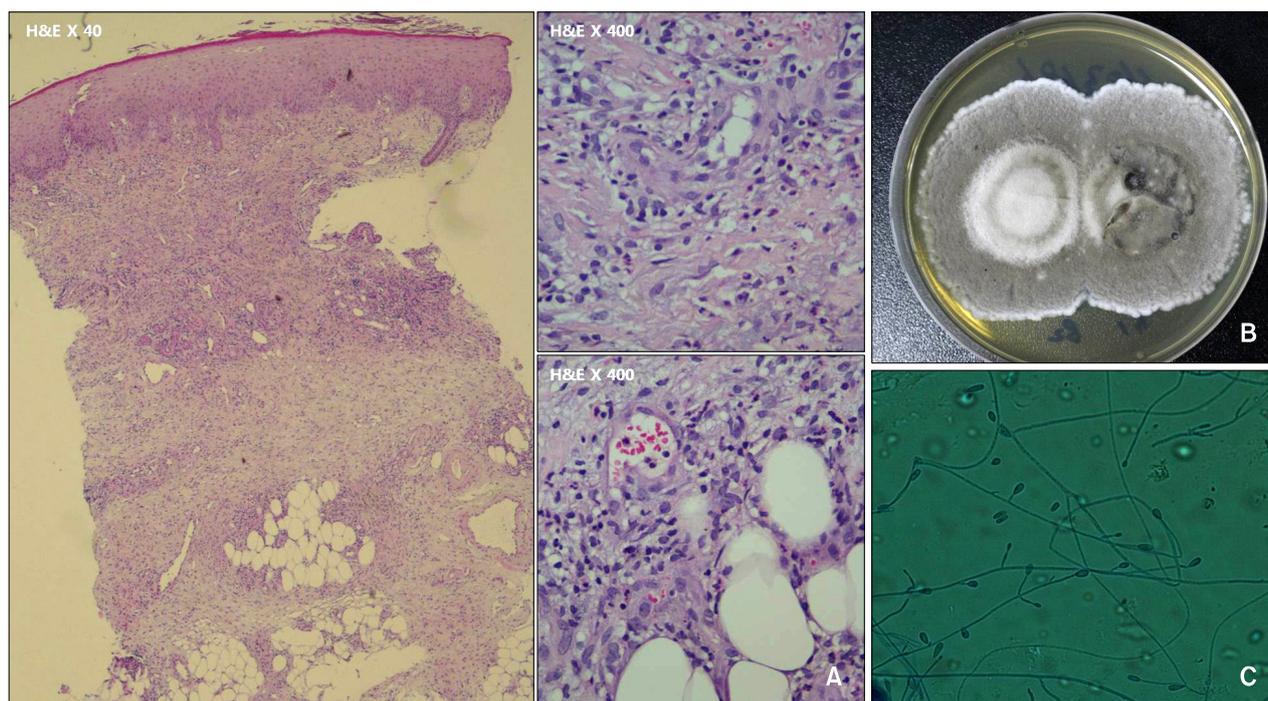
**Fig. 1.** (A) Painful erythematous purpuric swelling with scales on the dorsal surface of the right foot. (B) Improved lesions with residual hyperpigmentation after 3 months of therapy.

Received June 9, 2016, Revised August 30, 2016, Accepted for publication September 9, 2016

**Corresponding author:** Eun Jung Kim, Department of Dermatology, Wonkwang University Hospital, Wonkwang University School of Medicine, 895 Muwang-ro, Iksan 54538, Korea. Tel: 82-63-859-1590, Fax: 82-63-842-1895, E-mail: ej2000dr@naver.com

This is an Open Access article distributed under the terms of the Creative Commons Attribution Non-Commercial License (<http://creativecommons.org/licenses/by-nc/4.0>) which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

Copyright © The Korean Dermatological Association and The Korean Society for Investigative Dermatology



**Fig. 2.** (A) Diffuse inflammation indicated by the presence of neutrophils in the dermis and the subcutaneous fat (H&E; left:  $\times 40$ , right:  $\times 400$ ). (B) Velvety, grayish-white colonies on the surface of a Sabouraud agar plate as revealed by a fungal culture. (C) Branched conidiophores with single ovoid conidia, borne laterally or terminally on conidiophores (lactophenol cotton blue stain,  $\times 400$ ).

tide sequence of an internal transcribed spacer for the clinical sample was identical to that of *S. apiospermum* strain CBS 101.22 (GenBank accession number U43913). She was diagnosed with a localized cutaneous infection due to *S. apiospermum*. She started receiving intravenous voriconazole, 400 mg/d, for 1 month. Depending on symptom improvement, the drug regimen was changed from an intravenous to an oral form. However, new pustules developed; hence, itraconazole (400 mg/d) was orally administered instead of voriconazole. After itraconazole treatment for 2 months, the lesions improved with residual post-inflammatory hyperpigmentation (Fig. 1B).

Ishii et al.<sup>2</sup> reported the frequent occurrence of skin manifestations with localized *Scedosporium* infections, the most common being a subcutaneous node-type infection, followed by subcutaneous abscesses, ulcers, folliculitis, and lymphocutaneous-type sporotrichosis-like nodes. Thirteen cases have been reported in Korean literature<sup>3</sup>. Most cases involve the cutaneous nodule, followed by plaques, ulcers, abscesses, and pustules, with itraconazole being the treatment of choice. However, this case demonstrates that *Scedosporium* infections can present as cellulitis. In a recent study with an *in vitro* susceptibility test, voriconazole was considered the most effective agent against all *Scedosporium* strains<sup>4</sup>. In this case, the patient could not achieve therapeutic levels with oral voriconazole regimens.

Oral regimens have the risk of subtherapeutic exposure compared with intravenous regimens, as food influences the bioavailability of voriconazole by reducing drug absorption<sup>5</sup>.

Herein, we report a rare case of a cutaneous infection similar to cellulitis caused by *S. apiospermum*. This case highlights that fungal infections should be considered in the differential diagnosis of cutaneous erythematous swelling presenting as cellulitis.

## ACKNOWLEDGMENT

This paper was supported by Wonkwang University in 2017.

## CONFLICTS OF INTEREST

The authors have nothing to disclose.

## REFERENCES

1. Kim HU, Kim SC, Lee HS. Localized skin infection due to *Scedosporium apiospermum*: report of two cases. *Br J Dermatol* 1999;141:605-606.
2. Ishii S, Hiruma M, Hayakawa Y, Sugita T, Makimura K, Hiruma M, et al. Cutaneous *Pseudallescheria boydii*/*Scedo-*

- sporium apiospermum Complex (Molecular type: Scedosporium apiospermum [Clade 4]) infection: a case report and literature review of cases from Japan. *Med Mycol J* 2015; 56:E25-E30.
3. Yoo JY, Song YB, Suh MK, Ha GY, Lee JI, Sohng SH. A case of localized skin infection due to *Scedosporium apiospermum* diagnosed by DNA sequencing of the internal transcribed spacer region. *Korean J Med Mycol* 2014;19:45-51.
  4. Wang H, Wan Z, Li R, Lu Q, Yu J. Molecular identification and susceptibility of clinically relevant *Scedosporium* spp. in China. *Biomed Res Int* 2015;2015:109656.
  5. Purkins L, Wood N, Kleinermans D, Greenhalgh K, Nichols D. Effect of food on the pharmacokinetics of multiple-dose oral voriconazole. *Br J Clin Pharmacol* 2003;56 Suppl 1: 17-23.

<https://doi.org/10.5021/ad.2017.29.5.642>



## A Case of Hailey-Hailey Disease with a Novel Nonsense Mutation in the *ATP2C1* Gene

Hazuki Yasuda, Nobuo Kanazawa, Mitsuhiro Matsuda<sup>1</sup>, Takahiro Hamada<sup>1</sup>, Minao Furumura<sup>1</sup>, Takashi Hashimoto<sup>1,2</sup>, Takekuni Nakama<sup>1</sup>, Fukumi Furukawa

*Department of Dermatology, Wakayama Medical University, Wakayama,* <sup>1</sup>*Department of Dermatology, Kurume University School of Medicine,* <sup>2</sup>*Kurume University Institute of Cutaneous Cell Biology, Kurume, Japan*

Dear Editor:

Hailey-Hailey disease (HHD) is an autosomal dominant hereditary skin disease typically presenting with vesicles, erosions and crusts on the intertriginous areas such as the neck, axillae, groins, and perineum after the middle age. The responsible gene for HHD is *ATP2C1*, which encodes human secretory pathway  $\text{Ca}^{2+}/\text{Mn}^{2+}$ -ATPase protein 1 (SPCA1), a  $\text{Ca}^{2+}$  pump expressed in the Golgi apparatus<sup>1</sup>. Although over 150 pathological mutations have been identified throughout *ATP2C1*, no clear genotype-phenotype correlation has been revealed<sup>2</sup>.

A 50-year-old Japanese male had a 2-year history of recurrent erythemas with vesicles and erosions on the posterior neck, axillae and popliteal fossae. Despite application of topical steroids, he had difficulty in walking due to painful inguinal erosions and was admitted. Skin lesions of the patient included erosions with pustular discharge

on the inguinal area and erythemas with vesicles and crusts on the back, abdomen, axillae and thighs (Fig. 1A, B). The serum level of C-reactive protein was elevated (2.9 mg/dl), and *Streptococcus agalactiae* was cultured from inguinal discharge. Histopathological examination of vesicular erythema on the back revealed a separation of keratinocytes (acantholysis) at the suprabasal layers of the epidermis, which gave the appearance of “dilapidated brick wall” (Fig. 1C). Direct immunofluorescence was negative and generalized HHD with secondary bacterial infection was suspected. The lesions were improved by staying calm with oral clarithromycin and olopatadine hydrochloride, as well as topical zinc oxide for inguinal lesions and difluprednate for other lesions. After discharge, skin lesions occasionally flared and temporal administration of oral steroid was required.

By genetic analysis of the patient’s peripheral blood, a

Received June 21, 2016, Accepted for publication September 9, 2016

**Corresponding author:** Nobuo Kanazawa, Department of Dermatology, Wakayama Medical University, Kimiidera 811-1, Wakayama 641-0012, Japan. Tel: 81-73-441-0661, Fax: 81-73-448-1908, E-mail: nkanazaw@wakayama-med.ac.jp

This is an Open Access article distributed under the terms of the Creative Commons Attribution Non-Commercial License (<http://creativecommons.org/licenses/by-nc/4.0>) which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

Copyright © The Korean Dermatological Association and The Korean Society for Investigative Dermatology