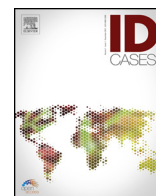




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## Case report

## Squamous cell carcinoma mimicking fungal infection

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## ABSTRACT

A 61 year old immunosuppressed male presented with a non-healing wound following a rose thorn injury. Initial cultures revealed *Candida parapsilosis*, however histology confirmed squamous cell carcinoma in-situ (SCCis). This case emphasizes the importance of biopsy and cultures as fungal infection and SCCis often have similar, non-specific clinical appearances.

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## Case report

A 61 year old African American male currently receiving chemotherapy for multiple myeloma presented with a 3 month history of a non-healing wound on the finger that occurred after a puncture wound from a rose thorn while gardening. He reported some pain and tenderness, and denied any fever or malaise. He applied triple antibiotic ointment with no relief.

On his left 4th digit, just proximal to the nail fold, was a tender 1.4 × 1.2 cm hyperpigmented, hyperkeratotic plaque with an area of shallow erosion. There was no deformity or hyperpigmentation of his nail. A saucerization biopsy of the lesion was performed for histology and tissue cultures. The patient was treated with itraconazole 200 mg PO daily for presumed sporotrichosis infection. Tissue cultures for bacteria and fungi grew only *Candida parapsilosis*. Histology revealed full thickness epidermal keratinocyte atypia consistent with squamous cell carcinoma in-situ (SCCis) and it resolved with excision (Figs. 1 and 2).

## Discussion

*Candida parapsilosis* has been reported as the predominant candidal species transmitted in hospitals from the hands of health care personnel, particularly those with onychomycosis, onycholysis, or artificial nails [1]. Like most species of candida, *C. parapsilosis* is a transient commensal of skin flora and its pathogenicity is limited to breaches in the skin barrier. Disease is

usually limited to superficial skin infections such as ulcers and most infections resolve spontaneously without treatment [3]. However, infection can become severe in immunocompromised patients, patients receiving parenteral hyperalimentation, and patients in the ICU [2]. Amphotericin B has been the traditional treatment for *C. parapsilosis* candidemia, but there are no established treatment guidelines. Owing to their more favorable side effect profile, fluconazole and other azole antifungals are utilized as alternatives to amphotericin. Low level resistance to azoles has been reported, with fluconazole and itraconazole demonstrating slightly higher levels of resistance than voriconazole. However the rate of resistance remains lower than 5% and overall susceptibility still remains high [2].

Given our patient's immunosuppression and preceding rose thorn puncture wound, sporotrichosis was initially suspected. Culture grew *Candida parapsilosis*, which has been reported to mimic sporotrichosis infection following rose thorn injury [3]. However, *C. parapsilosis* can colonize the skin and nails and our histology revealed squamous cell carcinoma in-situ. Culture growing *C. parapsilosis* as the sole pathogen could be suggestive of infection over colonization, which may have led to a misdiagnosis and inappropriate treatment in our case. We present this case to highlight the importance of obtaining histological examination in addition to culture. His immunosuppression raised concern for infection, however it also confers an increased risk of skin cancer. It is well-known that iatrogenic immunosuppression can lead to an increased risk of secondary primary tumors, particularly SCC. In kidney and heart transplant patients receiving immunosuppressive therapy, there is a 65–250-fold increased risk of developing SCC [6]. The degree of risk also has a linear

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**Fig. 1.** Patient's wound at time of presentation.



**Fig. 2.** Patient's wound at 4 week follow-up post excisional biopsy.

correlation with the number and/or dosages of the medications used. For example, compared to kidney transplants, heart transplant recipients, who typically receive more medication for immunosuppression, were three times more likely to develop nonmelanoma skin cancer [7]. Furthermore, patients with

multiple myeloma have nearly double the risk of developing skin cancer compared to age-, race- and gender-matched control subjects, with the most significant being SCC [8].

In another case of *C. parapsilosis* following rose thorn injury in an immunocompetent patient, cultures similarly grew solely *C. parapsilosis* and the wound healed following antifungal therapy with itraconazole [3]. Although our case draws many similarities, including a rose thorn injury and subsequent growth of *C. parapsilosis* from cultures, our biopsy of the lesion revealed SCCis. This highlights the importance of biopsy since squamous cell carcinoma and fungal infection cannot be distinguished on clinical grounds alone and tissue culture can be misleading in lesions that are secondarily colonized.

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

#### Authors declaration

Both authors have seen and approved the manuscript, contributed significantly to the work, and also that the manuscript has not been previously published nor is not being considered for publication elsewhere.

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#### References

- [1] Kauffman CA. Fungal infections. In: Hall JB, Schmidt GA, Kress JP, editors. Principles of Critical Care, 4e. New York, NY: McGraw-Hill; 2015. . Accessed February 29, 2016 <http://accessmedicine.mhmedical.com/content.aspx?bookid=1340&Sectionid=80034756>.
- [2] Trofa D, Gácsér A, Nosanchuk JD. *Candida parapsilosis*, an emerging fungal pathogen. Clin Microbiol Rev 2008;21(4):606–25, doi:<http://dx.doi.org/10.1128/CMR.00013-08>.
- [3] Turkal NW, Baumgardner DJ. *Candida parapsilosis* infection in a rose thorn wound. J Am Board Fam Pract 1995;8(6):484–5.
- [6] Jensen P, Møller B, Hanse S. Skin cancer in kidney and heart transplant recipients and different long-term immunosuppressive therapy regimens. J Am Acad Dermatol 2000;42(2 Pt. 1):307.
- [7] Euvrard S, Kanitakis J, Decullier E, et al. Subsequent skin cancers in kidney and heart transplant recipients after the first squamous cell carcinoma. Transplantation 2006;81(8):1093–100.
- [8] Robinson AA, Wang J, et al. Risk of skin cancer in multiple myeloma patients: a retrospective cohort study. Eur J Haematol 2016, doi:<http://dx.doi.org/10.1111/ejh.12748>.