

ROUNDTABLE DISCUSSION:

ONYCHOMYCOSIS



As part of our Roundtable Discussion series, *Podiatry Now* has brought together a group of leading experts in dermatology from around the world to discuss the topic of onychomycosis. We posed a series of 10 questions to the panel and it is hoped that the responses prove thought provoking and stimulate further debate

The current consensus of opinion suggests onychomycosis is generally secondary to tinea pedis – Opening question; Would you agree?

Dr de Berker: I would say they are associated and that tinea pedis is a risk factor for onychomycosis but I think that there are instances of onychomycosis independent of tinea pedis, and in particular mould onychomycosis.

Dr Bristow: The two frequently occur together. It is highly likely that the skin infection begins first and there is eventual spread to the nails. This is particularly the case with typical dermatophyte infection such as *Trichophyton rubrum*. Of course, the skin infection could then be treated and resolved but the nail infection may remain and act as a source of reinfection for the skin.

Does the presence of dermatophyte in a nail sample always suggest onychomycosis?

Dr de Berker: I presume this is based on culture of a dermatophyte not a microscopy suggestive of dermatophyte. In that I would not be sampling a nail to look for dermatophyte if I did not think there was likely to be fungus present, it would be difficult to test the hypothesis. I would need to test a lot of normal looking nails to look for fungus to work out if the presence of dermatophyte was associated with normal nails.

Current practice suggests that finding dermatophyte in a nail sampled to look for fungus will suggest that the fungus is contributory to the state of the nail.

Dr Baran: Yes, if the nail is clinically abnormal.

Dr Ashbee: Yes, dermatophytes are not generally colonisers and are not commensals so unless there is reason to believe contamination has occurred in the lab, it is a sign of infection. One exception is when you isolate dermatophytes associated with soil (geophilic species), which are less likely to cause infection and may just be colonising nail or skin.

Dr Bristow: I suppose the key issue is whether the nail is clinically abnormal. Examination of nails which are of concern to the patient is usual practice and the demonstration of dermatophytes or mould can only suggest their role in the aetiology of the nail condition.

For a podiatrist in private practice, how important is it to identify the specific species responsible for the infection over just establishing the presence of a fungus and treating it empirically?

Dr de Berker: It can be important to make a distinction between dermatophyte and non-dermatophyte. Within the non-dermatophytes it can also be helpful to know which one it is, as some will be responsive to oral treatment and some will not. The knowledge will help the podiatrist work out if they need to consider the help of a prescribing colleague or not.

Dr Baran: The treatment is not the same for all types of fungi, consequently I never treat without culture.

Dr Bristow: It is fairly safe to say that most of the toe nail infections presenting in clinic will be typical dermatophytes but there will always be a few that are not. Some of the local NHS laboratories are now just undertaking microscopy to confirm the presence of a fungal infection and, if they are found, they go no further, which is of concern.

Dr Ashbee: Probably not too important as treatment is the same for onychomycosis regardless of the species of dermatophyte, although non-dermatophytes may need different treatment. At other sites, it may be more important to differentiate as it could give information about source of infection and one or two species are slightly less susceptible to treatment than others.

Is it appropriate / safe to treat suspected onychomycosis topically without laboratory confirmation?

Dr de Berker: It may be safe but it is not appropriate and possibly not ethical. There are two costs of treating empirically when the diagnosis is wrong. The first cost is the mistaken medication, consultation costs and personal effort. The other cost is the variable one, i.e. the level of cost of the missed diagnosis. If this is simply traumatic change, then the cost is not high. If the missed diagnosis is a squamous cell cancer or melanoma (both of which can be mistaken for onychomycosis) then the cost in personal risk and possibly outcome is high. I suggest to all clinicians that they should not treat for fungus until there is a clear mycological diagnosis and if they cannot get a clear diagnosis then they need to make a clear alternative diagnosis.

Dr Ruben: Safe, yes. Appropriate? I would want to see confirmation of a diagnosis first.

Dr Baran: Absolutely inappropriate.

Dr Ashbee: No, it is not appropriate as it may be a waste of money if the cause is, in fact, psoriasis or something else. There is some toxicity associated with topical antifungals and also the cost, time and effort on behalf of the patient is a waste if it is not a fungal cause.



FACILITATOR:
DR IVAN BRISTOW,
UNIVERSITY OF
SOUTHAMPTON

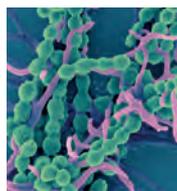
CONTRIBUTORS:
DR H RUTH ASHBEE
VISITING
LECTURER,
UNIVERSITY OF
LEEDS

DR ROBERT BARAN
DERMATOLOGIST,
CANNES, FRANCE

DR DAVID DE BERKER
COULTANT
DERMATOLOGIST,
BRISTOL ROYAL
INFIRMARY

DR IVAN BRISTOW
UNIVERSITY OF
SOUTHAMPTON

DR BETH RUBEN
DERMATO-
PATHOLOGIST,
CALIFORNIA, USA



Cover pic: Electron micrograph (SEM) of *Scopulariopsis brevicalis*, a non-dermatophyte mould nail infection. Credit: Dennis Kunkel Microscopy/Science Photo Library

Is onychomycosis more prevalent in patients with systemic diseases such as diabetes and vascular disease?

Dr Bristow: A number of published studies suggest that the nail infection is more common in patients with diabetes and vascular disease, along with those who are immuno-suppressed.

Dr Ashbee: Onychomycosis is more prevalent in older patients and, as diabetes and vascular disease are also more prevalent in older patients, it is hard to know if they are concomitant or have a causative relationship.

How should onychomycosis in young children be managed?

Dr de Berker: A clear diagnosis should be established. Then foot and nail care should be used to manage the disease topically. The level and kind of treatment depends on the pattern of disease and the age of the child. Once they are adolescents then management overlaps with the management of an adult and they may end up on systemic therapy.

Dr Ashbee: Ideally topical treatment as children's nails are thinner and hence penetration of agents is better than in adults.

Dr Ruben: Topical agents should be the first line.

Dr Baran: Urea avulsion followed by topical nail lacquers except in chronic mucocutaneous candidosis.

In daily practice, with the treatments available, how concerned should we be about the discussion around resistance to antifungal agents?

Dr de Berker: It remains a possible part of the black box of why we don't have success, among several other variables, but I don't see it as a major issue.

Dr Ruben: Not sure. All of them have a significant failure rate.

Dr Baran: Usually the resistance is rare. The cause of failure is mainly dermatophytoma – where there is an area of fungal mass under the nail, which drugs cannot easily penetrate. This explains the usefulness of the urea avulsion or mechanical abrasion.

Dr Ashbee: No concern as it is exceedingly rare in dermatophytes. Most cases of 'resistance' are not about true drug resistance, but likely to be due to poor compliance, lack of drug penetration or re-infection.

A laboratory result reports a patient has a non-dermatophyte mould nail infection. What would be your suggested treatment?

Dr de Berker: It depends on the non-dermatophyte. *Candida* and





Figure 1. Onychomycosis of the nails.
Credit: DR P. MARAZZI/SCIENCE PHOTO LIBRARY

Aspergillus may well respond to oral treatment. *Fusarium* or scopulariopsis will need topical treatment. However I am a big fan of topical treatment of all fungi when possible and, although amorolfine may be helpful for mild distal disease, I would normally rely on substantial debridement by any of many methods and then treatment of the nail with ketoconazole cream under clingfilm at night for 6 to 12 months. Throughout, nails need to keep being debrided to remove any abnormal or onycholytic nail.

Dr Ruben: I agree, it depends a little on the organism, and degree of involvement/severity, but I would generally use an azole antifungal.

Dr Baran: This may be debatable if the mould is not *Fusarium*, *Aspergillus*, *Acremonium* or *Neoscytalidium*, which necessitate treatment.

Dr Ashbee: This depends on the organism. Few are capable of really causing infections and most are secondary invaders. I would be inclined to take another sample in the hope of recovering any dermatophyte and then, if that is recovered, treat for the dermatophyte and the non-dermatophyte will also clear. If it is *Onychocola canadensis* or *Neoscytalidium* then these are likely to be the cause of infection and harder to treat. With these, there are probably no good treatment options (except nail removal) so I would discuss with the patient and see if they want that, or just to live with it.

Once a nail infection has been eradicated, how likely is it to return? In addition, are there any measures that should be considered to reduce this?

Dr de Berker: In the 54-month follow-up study by Sigurgeirsson *et al*,¹ the

terbinafine mycology cure rates were 78% at 18 months and then 46% after 54 months, giving a relapse rate of about 10% per year. The complete cure rate dropped from 50% to 35% in the same period, which again gives a 10% relapse per year. In 1998, in a long-term onychomycosis follow up, Tosti also showed that 22% of patients relapse within three years of initial cure, i.e. about 7% per year.²

We argue that good nail care and skin care with rapid attention to tinea pedis are useful measures, but I am not sure of much direct evidence of this. Although the indirect substantiation seems reasonable, in a randomised controlled trial, using miconazole dusting powder post-treatment did not make any difference.³ In a later paper, Sigurgeirsson *et al* showed that using amorolfine twice a week in people cured of onychomycosis was associated with a relapse rate of 30% over 3 years (i.e. 10% again).⁴ The relapse rate was 50% in those who did not use the lacquer, but this only had a *p* value of 0.153, so who knows?

Dr Ruben: Very likely. And, are there any measures that should be considered to reduce this? Avoidance of common modes of reinfection.

Dr Baran: You mean to relapse? If so, I suggest a treatment for two years twice a month with amorolfine for example as a prevention.

Dr Ashbee: Yes, it's very likely to return – either from lifestyle (e.g. swimming, visiting gyms, etc) or from re-infection from shoes/socks or the home. There are no good studies of how to prevent this, but in the absence of anything else, use of antifungal powders in shoes/socks may be better than nothing.

What do you think is a step forward or has potential in onychomycosis now, or in the future?

Dr de Berker: Self care! People need to take care of their feet and nails in a more long term sense for reasons far more important than onychomycosis alone. With increasing longevity, people are going to be on their feet longer and longer and need the mechanical, cutaneous and nail functions of their feet to be kept in good order. This is best done through long-term attention to detail for the individual rather than medical innovations – although they may also play their part in some way. I am resistant to the idea that we are looking for new drugs for onychomycosis, although I think we would benefit from better ways of using the topical and physical agents we have.

Dr Ruben: I will leave that to the therapeutic experts, but better topical agents and ways for them to penetrate the nail would be helpful.

Dr Baran: Laser therapy, if a topical treatment can be kept on for two years in a preventive manner.

Dr Ashbee: Not much at the moment. I think a key area is to find treatments that give higher cure rates and ideally are more patient-friendly than the current ones.

Dr Bristow: It would be good to see the introduction of better and faster diagnostic techniques such as Polymerase Chain Reaction (PCR) into common podiatric practice. PCR is a rapid means of determining the presence of an organism based on the presence of its DNA in a skin or nail sample.

This hopefully would improve the reliability of test results and they would be faster.

REFERENCES

1. Sigurgeirsson B, Ólafsson JH, Steinsson J, *et al*. Long-term effectiveness of treatment with terbinafine vs itraconazole in onychomycosis; a 5-year blinded prospective follow-up study. *Arch Dermatol* 2002; 138(3): 353-357. doi:10.1001/archderm.138.3.353.
2. Tosti A, Piraccini BM, Stinchi C, Colombo MD. Relapses of onychomycosis after successful treatment with systemic antifungals: a three-year follow-up. *Dermatology* 1998;197(2):162-166.
3. Warshaw EM, St Clair KR. Prevention of onychomycosis reinfection for patients with complete cure of all 10 toenails: Results of a double-blind, placebo-controlled, pilot study of prophylactic miconazole powder 2%. *J Am Acad Dermatol* 2005; 53(4): 717-720.
4. Sigurgeirsson B, Ólafsson JH, Steinsson JT, Kerrouche N, Sidou F. Efficacy of amorolfine nail lacquer for the prophylaxis of onychomycosis over 3 years. *J Eur Acad Dermatol Venereol*. 2010;24(8):910-915.