Nails and hair

David de Berker

Abstract

The hair and nail are appendages of the skin. They both hang off it and are part of it. Their growth, condition and integrity are indicators of both local and systemic pathologies. Age results in significant changes in hair growth with characteristic patterns of baldness evolving with time. Excess hair is largely a complaint of women, in whom it may represent part of the normal spectrum of pigmented coarse hairs in a male distribution or be a sign of an endocrine pathology. The most common diseases causing disturbance of the nail are inflammatory diseases of the skin, such as psoriasis and eczema. These can also cause problems on the scalp, although the scarring skin diseases such as discoid lupus erythematosus and lichen planus are of additional significance at this site. Some inflammatory diseases, such as alopecia areata, are specific to the hair follicle and matrix of the nail. Bacterial and fungal infections can affect the skin within which the appendage is lodged, or invade the appendage itself, providing characteristic patterns of disease. Malignancy is relatively uncommon, but this rarity also means that there is often significant delay in diagnosis, which in the case of subungual malignant melanoma can result in very poor prognosis.

Keywords alopecia; alopecia areata; fungal; hair; hirsutism; melanoma; nail; onychomycosis; psoriasis

What's new?

- Dermoscopy can be a useful aid in diagnosis and assessment of disorders of nail and scalp
- Biologic agents are useful in the management of nail psoriasis and whilst this is normally in the context of bad skin or joint disease, it does not need to be
- Although laser treatment has been advocated for the treatment of onychomycosis, high-quality randomized controlled trials are not yet available to validate it

Nails

The nail grows from the matrix and is supported by the nail bed until it reaches the free edge.

The most common local diseases affecting the nail are psoriasis, fungal nail infections, peri-ungual eczema and viral warts. Tumours other than viral warts are rare and include squamous cell carcinoma and malignant melanoma. Systemic diseases manifested in the nail include vascular phenomena (e.g. splinter haemorrhages and cyanosis) and changes in nail growth as a result of general metabolic factors influencing nail matrix function.

Nails in local disease

Psoriasis

Psoriasis (see *MEDICINE* 2013; **41(6)**: 334–340)[1] affects 1.5–3% of the population, and nail involvement is found in up to 90% of patients at some time.

Clinical features

The principal clinical features of nail psoriasis are as follows.

- Pits represent foci of a poor-quality psoriatic nail that drops off the surface.
- Onycholysis is separation of the nail from the nail bed.
- Subungual hyperkeratosis is thickening of the skin of the nail bed with psoriatic scale.
- A salmon patch or 'oily' spot is psoriasis in the nail bed.

Even in the presence of obvious psoriasis elsewhere, if the nail features are not typical, fungal infection should be sought by sending clippings for mycological examination because treatable infection may be superimposed and may warrant active therapy.

Treatment[2–4]

Local therapy – pitting may be reduced by concealment with lacquers or may respond to a potent topical corticosteroid applied over 2–3 months to the proximal nail fold. Severe pitting may occasionally justify a trial of injection of triamcinolone acetonide, 0.1 ml of 2.5–5 mg/ml, into the proximal nail fold, with preliminary local anaesthetic. Excess therapy leads to local nail fold atrophy, but two or three treatments per year should be tolerated.

Onycholysis is made worse by trauma and picking. Patients should avoid leverage at the free edge by keeping the nails short and by wearing gloves during wet or dirty work. Debris caught beneath the nail should be removed with a soft nail-brush since excavation with a pointed tool (a common cleaning technique) makes the condition worse. Clipping the nail back to the point of separation from the nail bed can facilitate treatment of nail bed psoriasis with a topical corticosteroid, calcipotriol or possibly tazarotene.

Systemic therapy such as methotrexate, ciclosporin or acitretin and psoralen plus ultraviolet (UV) A can help, but the risk:benefit ratio needs to be considered. Where there is widespread psoriasis or disabling nail psoriasis, biologic agents such as infliximab can be effective for the nail manifestations.

Fungal nail infection

The prevalence of fungal nail disease (Figure 1) is up to 13% in urban areas in developed countries, but less than 1% in rural Democratic Republic of Congo. The principal pathogens are dermatophyte fungi, such as *Trichophyton rubrum* and *Trichophyton interdigitale*. The non-dermatophyte fungi (e.g. *Scytalidium dimidiatum* and *Scopulariopsis brevicaulis*) and yeasts (e.g. *Candida* spp.) are uncommon pathogens. Onychomycosis is more common in damaged nails.

Tinea pedis often co-exists between the fourth and fifth web space or as a moccasin infection (a diffuse, scaling fungal infection affecting the sole of the foot).

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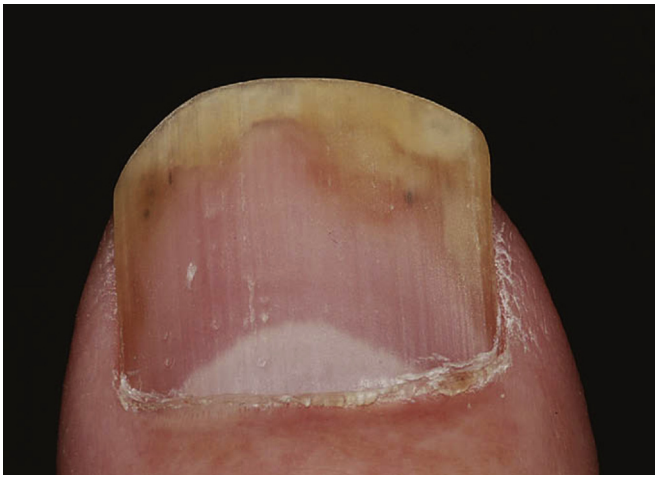

Figure 1 Psoriasis can cause lifting of the nail, known as onycholysis, and is also often associated with splinter haemorrhages.

Clinical features

The principal clinical features of fungal nail infection are as follows.

- Onychomycosis presents in one of four patterns (Figure 2).
- Most nail fungal infections cause discoloration of the nail. Toenails are typically thickened and fingernails may be made fragile enough to disintegrate. Infected keratin debris is present on the nail bed.

In the most common pattern (distal lateral onychomycosis) the appearance may be difficult to distinguish from psoriasis, but the history is always of distal disease progressing proximally. Dermoscopy can help with detection of yellow streaks extending back from the nail-free edge, which contain fungal infection. These features can help differentiate from some patterns of psoriasis.[5]

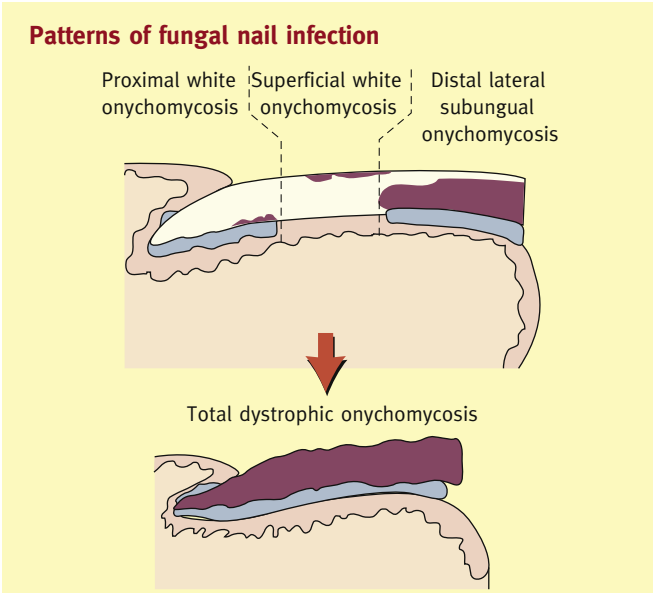

Figure 2

Diagnosis

A large sample of nail plate, with underlying soft debris, is required for a reliable result. This is best taken using heavy-duty nail clippers. The importance of making a clear diagnosis before treatment is greatest where systemic therapy is advocated. Both of the main agents have been reported as causing severe reactions such as Stevens–Johnson syndrome, and drug interactions are a particular risk with itraconazole.

Treatment

Systemic therapies – terbinafine and itraconazole are systemic therapies for dermatophyte onychomycosis. Definitions of success vary,[6] but a large multicentre trial demonstrated a success rate of about 55% with terbinafine in dermatophyte toenail infection and 26% with itraconazole.[7] *Aspergillus* and *Candida* may respond to antifungal therapy, but other non-dermatophytes can be difficult to eradicate.

Treatment with terbinafine is continued for 6 weeks for a fingernail and 12 weeks for a toenail.[4] Itraconazole is administered in 1-week pulses, in weeks 1 and 5 for a fingernail and weeks 1, 5 and 9 for a toenail.

Topical therapy is usually less effective than systemic therapy. It can be the treatment of choice in superficial white onychomycosis where debriding the surface of the nail is combined with topical treatment to good effect.

Relapse

A relapse may be reduced by vigorous treatment of local tinea pedis and by avoidance of trauma through correction of orthopaedic abnormalities, for example by the wearing of broad-fitting footwear.

Tumours

Tumours involving the nail are uncommon, but clinicians should be aware of them because malignant melanoma and squamous cell carcinoma are associated with considerable morbidity even though definitive treatment for early tumours is available.

Clinical features

There is a significant but undefined risk that any brown or black longitudinal streak arising in the nail in a Caucasian is a malignant melanoma (Table 1).

Invasive or in situ squamous cell carcinoma may present as a warty or scaling change or a tumour of the nail folds (Figure 3), which can gradually disrupt nail growth and displace normal matrix function.

Treatment

All skin cancer of the nail folds and nail bed is treated with surgery.

Nails in systemic disease

Clubbing

Clubbing is a classic sign of various disorders (Table 2), but is also seen in some healthy individuals. Features include increased longitudinal curvature and loss of the angle between the nail at its proximal margin and the nail folds. This margin is 'boggy' or fluctuant. There may be associated cyanosis if