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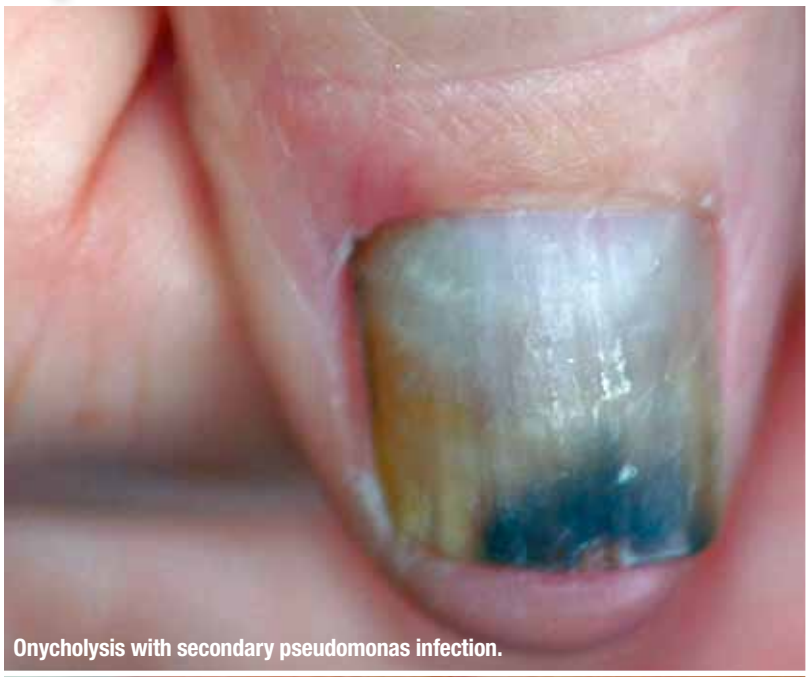
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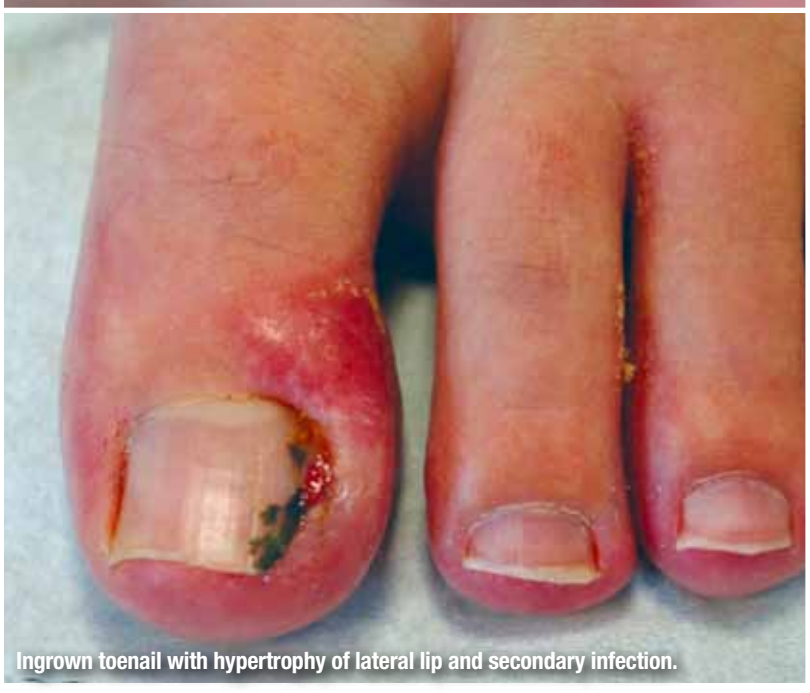
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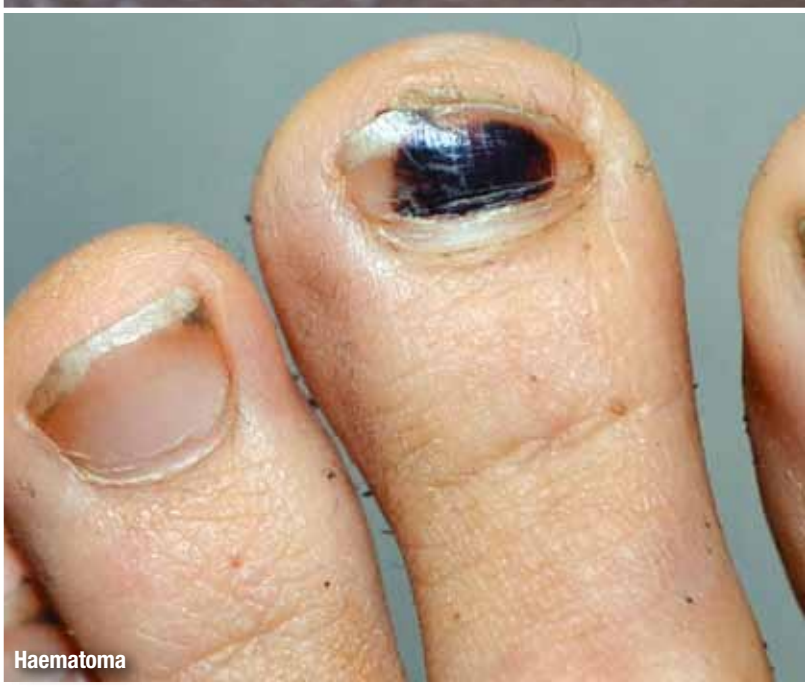
Haematoma

Ten important NAIL DISORDERS

Introduction

THE nail and the nail apparatus are important indicators of an individual's health. They can signify both systemic and local disease, and are significant in a person's appearance. Disease not only causes discomfort and impaired functionality, but severe psychological distress and social embarrassment. The ability to recognise nail pathology and manage appropriately are increasingly important in everyday practice. This article aims to cover common nail disorders and provide practical approaches to treatment.

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INSIDE

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Onycholysis

ONYCHOLYSIS refers to detachment of the nail plate from the nail bed. It usually starts at the distal free edge of the nail and progresses proximally.

The detached nail appears smooth and white-yellow because of air trapped in the subungual space. It is usually asymptomatic but causes cosmetic concern.

Onycholysis may be idiopathic, related to trauma, or owing to nail bed disorders. (see table 1). If all nails are involved, then a drug or systemic disease is likely and fingernails may be more likely affected than toenails.

Asymmetrical fingernail involvement is more suggestive of a local cause or cutaneous pathology, such as psoriasis (see figure 1). The two main causes of onycholysis of the toenail, usually the great toe, are infection and trauma. Trauma from footwear is often because of hyperextension of the great toe during the propulsive phase of gait and consequent repeated hitting of the nail on the undersurface of the shoe front. Infection with fungi can lead to onychomycosis, and secondary infection with pseudomonas can cause green-brown discolouration of the nail (see figure 2).

Treatment is aimed at promoting reattachment of the nail bed to the nail plate as soon as possible. It is imperative to identify the cause in the first instance and initiate specific treatment if appropriate. General treatments are aimed at minimising trauma, avoiding irritants and preventing complications (see box 'Treatment of onycholysis'). If onycholysis is prolonged for more than six weeks, the resulting defect may be irreversible.

Table 1. Causes of onycholysis

Idiopathic	
Trauma (manicuring, occupational, accidental, onychogryphosis)	
Environmental/ irritants	Irritants: chemicals, paint, solvents, cosmetics Water Ultraviolet light (photo-onycholysis)
Cutaneous diseases	Psoriasis Eczema (atopic, contact, irritant) Lichen planus Blistering diseases Darier's disease Alopecia areata
Infections	Fungal: dermatophyte, moulds, yeasts (candida) Bacterial (Pseudomonas spp) Viral (warts, herpes simplex, herpes zoster) Scabies
Drugs	Retinoids, ACEIs, bleomycin, doxorubicin, NSAIDs, beta blockers, oral contraceptives Photo-onycholysis: tetracyclines, psoralens, thiazides, quinine, cloxacillin
Metabolic/systemic	Hyperhidrosis Systemic lupus erythematosus Yellow nail syndrome Endocrine: hyper- or hypothyroidism, diabetes mellitus

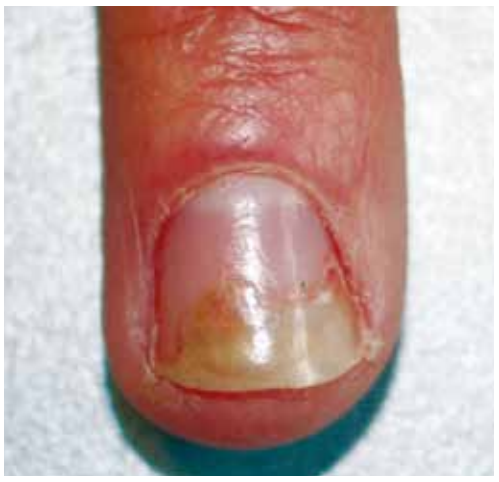

Figure 1. Onycholysis due to psoriasis (note the red-brown onychodermal band just proximal to onycholysis indicative of psoriasis)

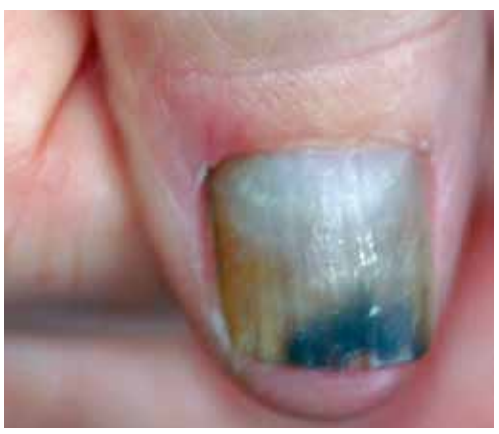

Figure 2. Onycholysis with secondary pseudomonas infection.

Treatment of onycholysis

- Recognise and treat cause.
- Protect nail from trauma and aggressive self-cleaning.
- Cut nail short and straight, and clip fortnightly until regrowing nail plate is attached to nail bed.
- Avoid nail varnish and manicuring until resolution.
- Tape free edge of nail (with surgical tape) to encourage adherence of nail plate to nail bed and to prevent progression of onycholysis.
- Avoid immersion in water, or wear cotton gloves under rubber gloves and dry after soaking.
- Properly fitted footwear.
- Refer to podiatry for gait assessment and correction of hyperextension of great toe by providing orthotics for metatarsal head support.
- Apply topical antiseptics: 2-4% thymol in chloroform twice daily.
- If pseudomonas infection: sodium hypochlorite solution 1 drop twice daily or vinegar soaks.
- Exclude secondary onychomycosis.

Onychomycosis

ONYCHOMYCOSIS of the nails is commonly due to infection with dermatophytes. Trichophyton rubrum accounts for 90% of cases. Less commonly, non-dermatophyte moulds and yeasts like *Candida albicans* can cause onychomycosis.

The mean prevalence of onychomycosis is 4.3%; however, figures are probably higher in Australia because of the hot and humid climate, and sporting habits.

Presentation

Onychomycosis can involve a single nail, multiple nails and very rarely all nails. Toenail infection is seven times more likely than fingernail disease. The first and fifth toe are most likely affected, and often accompanied by tinea pedis.

Onychomycosis of the fingernail is uncommon without toenail disease or tinea manuum. Fingernail disease alone is more likely to be psoriasis, even in the absence of psoriatic skin disease.

Onychomycosis has a variety of clinical presentations (see table 2). The clinical patterns depend on the way and the extent that the fungus invades the nail, as well as the type of fungus and the individual host susceptibility. Clinical features that are highly suggestive of onychomycosis include friable nails and spikes (see figure 5

Table 2. Clinical presentations of onychomycosis

Type of onychomycosis	Clinical appearance
Distal and lateral subungual onychomycosis (figure 3)	Hyperkeratosis of undersurface of distal nail plate and bed Onycholysis Dyschromias One hand-two foot syndrome Tinea pedis often present
Superficial white onychomycosis (figure 4)	Crumbling white lesions on nail surface Most common in children
Proximal (white) subungual onychomycosis	Infection in proximal nail fold and distal portion normal Patients with AIDS (gross white discoloration)
Total dystrophic onychomycosis	Complete destruction of nail plate

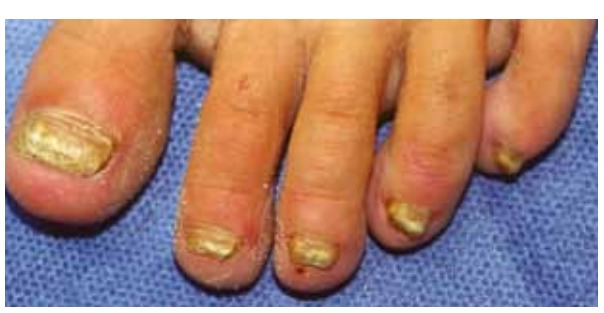

Figure 3. Distal and lateral subungual onychomycosis affecting all five toenails.

Figure 4. Early superficial white onychomycosis prior to nail plate friability.

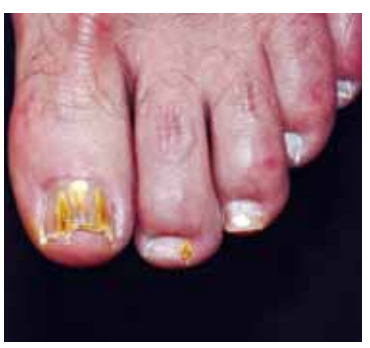

Figure 5. Deep linear yellow streaks/ spikes extending from the distal nail plate proximally. These are bands of yellow hyperkeratosis that progress from the distal margin proximally to the matrix. The proximal yellow mass represents a dermatophytoma, a mass of dividing fungus.

Diagnosis

Many disorders can mimic onychomycosis (see table 3). It is therefore important to establish microbiology confirmation prior to commencing treatment. Nails should be cleaned with an alcohol swab. Samples of nail clippings, scrapings from subungual tissue or superficial nail plate, or biopsies of nail plate should be sent for microscopy and culture. Culture can identify the specific fungus, but results can take 2–6 weeks and false-negative rates are high (30%). Nail plate can also be sent for histopathology, with results available in 3–5 days.

Treatment

Topical

Onychomycosis is an infection and should always be treated. Indications for topical treatment include up to 50% involvement of the nail plate, lack of matrix involvement, three or four nails affected, and superficial white onychomycosis.

Other considerations include children, prophylaxis in those at risk and when oral treatment is contraindicated. Three topical preparations are commonly used in treating onychomycosis (table 4). There is no data to support the use of any other topical agent as monotherapy.

Systemic

Oral treatments are generally more effective than topical therapies, but have potential adverse effects and drug interactions (see table 5). These are indicated if topical treatment has failed after six months, or if the disease does not qualify for topical therapy as listed above. Both terbinafine and itraconazole are considered first-line options for treatment.

Fluconazole, although not licensed for onychomycosis, is often used as an alternative agent. Griseofulvin is rarely used because of protracted treatment time and low cure rates. Griseofulvin is, at present, the only systemic therapy licensed in children aged under 18. However, there have been numerous safety studies look-

ing at terbinafine and itraconazole in children and, provided doses are adjusted, these are currently used under specialist supervision.

Debridement/Avulsion

Nail avulsion (complete removal) and debridement (partial removal) can be useful in severe disease, non-dermatophyte mould infection or when dermatophytomas are present (nidus of infection characterised by longitudinal streaks or spikes). These treatments help reduce fungal mass and enhance penetration of antifungal medication. Chemical avulsion can be performed with 40% urea ointment, while surgical avulsion involves separating the nail plate from the nail bed using a nail elevator. Systemic treatment is often continued in addition to these treatments.

Other

There are no randomised controlled trials as yet to recommend laser therapy for onychomycosis but numerous lasers have been approved, including Nd:YAG short pulse, Q-switch 1064nm and the diode 870, 930 and 980nm. Photodynamic treatment has been shown in a single-centre open trial to achieve cure rates of 44% at 12 months.

Table 3. Common differential diagnoses of onychomycosis

Condition	Features
Psoriasis	Pitting Oil drop sign Red onychodermal band proximal to onycholysis
Lichen planus	Nail plate thinned and ridged (longitudinal) Dorsal pterygium: scarring at proximal aspect of the nail
Trauma	Nail plate can appear abnormal Nail bed should be normal Distal onycholysis Single nail affected Homogenous alteration of nail colour
Eczema	Irregular buckled nails with ridging
Lamellar onychoschizia (lamellar splitting)	History of repeated soaking in water Usually distal portion of the nail
Periungual squamous cell carcinoma/Bowens disease	Single nail, warty changes of the nail fold, ooze from edge of nail
Malignant melanoma	Black discolouration of the nail plate or the nail bed Pigment can extend onto the nail fold
Alopecia areata	Pits, longitudinal ridging, brittleness, hair loss

Longitudinal melanonychia in a white-skinned adult requires biopsy to exclude a melanoma.

Table 4. Topical agents for onychomycosis

Treatment	Type	For	Dose	Cure rates
Amorolfine 5% lacquer	Broad-spectrum fungicidal and fungistatic	No matrix disease Maximum two nails involved Mild distal and lateral onychomycosis	1-2 times a week File before application 6-12 months	CC: 12.7% MC: 46.6% at 48 weeks
Ciclopirox 8% lacquer	Broad-spectrum fungicidal	No matrix disease Mild distal and lateral onychomycosis	Daily 24 weeks for fingers 48 weeks for toes	CC: 5.5-8.4% MC: 29-36%
40% Urea with 1% bifonazole	Bifonazole: broad-spectrum antifungal	Distal and lateral onychomycosis (less 50%) Up to 3 nails	Urea Daily, for 2-3 weeks Bifonazole Daily for four weeks but less than two months total	CC: 54.8% MC: 64.5% two weeks post treatment

CC= complete cure rates; MC= mycological cure rates

Table 5. Systemic drug therapies for onychomycosis in adults

Treatment	Dose	Contraindications	Blood monitoring
Itraconazole First-line therapy	200mg/day Six weeks for fingernails Twelve weeks for toenails 400mg/day for one week a month (pulse) Two pulses fingernails Three pulses toenails	Liver disease Heart failure Benzodiazepines, HMG-CoA reductase inhibitors, quinidines, pimozide Pregnancy (category C) Breastfeeding	LFT for continuous treatment only and repeat every 4-6 weeks
Terbinafine First-line therapy	250mg/day Six weeks for fingernails and 12-16 weeks for toenails	Liver disease Breastfeeding Pregnancy (category B)	LFT and FBC pre-treatment, then every 4-6 weeks
Fluconazole	50mg/week Six months for fingernails and 18 months for toenails	Renal/hepatic impairment Benzodiazepines/terfenadine/cisapride/ astemizole/pimozide/ quinidine/erythromycin Pregnancy (category C) Breastfeeding	Baseline LFT and FBC
Griseofulvin	500-1000mg/day 6-9 months for fingernails and 12-18 months toenail	Severe liver impairment Porphyria Lupus erythematosus Pregnancy (category C) Men fathering a child for six months after therapy	Monitor LFT regularly if mild hepatic impairment

Paronychia

PARONYCHIA is caused by inflammation of the lateral and proximal nail folds. The cuticle is destroyed by chemical or mechanical trauma. This causes inflammation that impairs nail fold keratinisation and prevents the formation of new cuticle, perpetuating the cycle of inflammation. Infection, allergens or irritants contribute to inflammation.

Acute paronychia

Acute paronychia usually follows minor trauma to the skin caused by manicuring, a splinter, thorn prick, or subungual haematoma. The infection presents with swelling, throbbing pain, heat and redness. Compression of the nail fold can produce pus.

Staphylococci and, less commonly, beta-haemolytic streptococci and gram-negative bacteria are implicated in infection. Usually one nail is involved and occasionally can accompany an ingrown toenail. If episodes recur at the same site, suspicion of herpes simplex virus should be considered.

Treatment involves drainage of an abscess, if present, and local antiseptics (2-4% thymol in chloroform/alcohol twice daily). Combination of topical antibiotics and potent topical corticosteroids can help reduce pain, inflammation and swelling. If pseudomonas is present, then sodium hypochlorite solution (1 drop, twice daily) can be applied around the nail.

Systemic antibiotics (and antivirals) are usually needed to prevent permanent nail dystrophy.

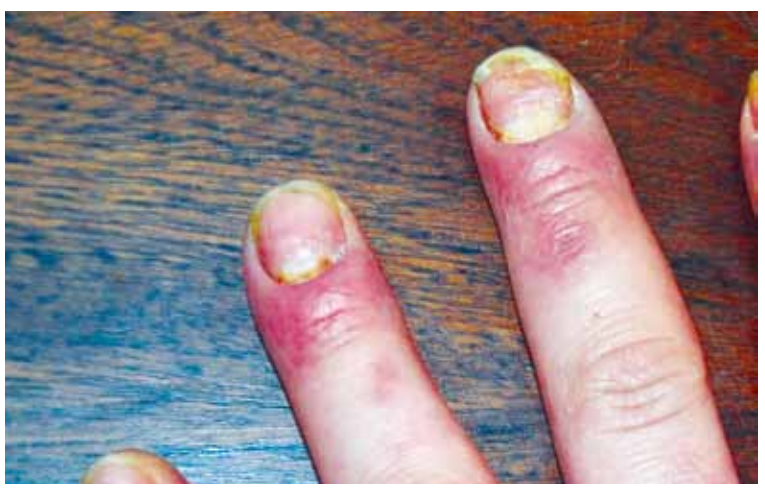

Figure 6. Chronic paronychia in a chef with loss of cuticle, proximal nail fold erythema and nail plate ridging.

Chronic paronychia

Chronic paronychia presents when there is prolonged contact with soap, water and detergents, for example with chefs, hairdressers and fishmongers. It is characterised by inflammation of the proximal nail fold with erythema, oedema and absent cuticle (see figure 6). One or several fingernails are usually affected.

Chronic inflammation damages the nail matrix and leads to nail plate abnormalities. The nail plate may become friable and rough, with irregular transverse ridges.

Table 6. Treatment of Chronic Paronychia

General	Avoid wet work Avoid trauma Wear cotton gloves under rubber gloves Avoid excessive manicuring and nail cosmesis
Active	Treat cause if known Moderate to potent topical corticosteroid nocte Tacrolimus 0.1% ointment twice daily In severe cases, use systemic corticosteroids or triamcinolone acetonide 2.5mg/mL into nail fold monthly Systemic antifungals play no role in treatment Recalcitrant cases: biopsy/radiology/culture, especially if one digit involved

Disease is usually prolonged and self-limiting. Secondary infection is common with candida and pseudomonas.

The causes of chronic paronychia include irritant reactions, contact dermatitis, food hypersensitivity, candida hypersensitivity and true candida paronychia. Drugs may be implicated including oral retinoids, cephalexin, protease inhibitors, methotrexate and cyclosporine.

Cutaneous diseases implicated include psoriasis, atopic dermatitis, autoimmune blistering disorders and granuloma annulare. Dermatomyositis, systemic lupus erythematosis and systemic sclerosis, and Raynaud's disease may all present with paronychia. Capillaroscopy can allow for examination of the periungual capillaries in these conditions.

Zinc deficiency and haematological malignancies can present with paronychia, albeit rarely. In diabetes mellitus and peripheral vascular disease, presentation in the toenails may occur and needs be excluded unless a diagnosis of ingrown toenails can confidently be made.

Treatment addresses prophylaxis, maintenance and active therapy, and is listed in table 6.

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Psoriasis

PSORIATIC nail changes can affect 50% of patients with psoriasis of the skin. Fewer than 5% of patients can have nails affected as the only manifestation of disease. Up to 85% of patients with psoriatic arthritis of the hands and feet will have nail disease, which can look unsightly and can cause distress.

Depending on the site of nail apparatus disease, the patient will present with different signs (see table 7). These signs may be seen together in the same nail. Irregular nail pitting (see figure 7), onycholysis with an erythematous border (see figure 8), and the oil drop sign are diagnostic of psoriasis. However, toenail psoriasis can be indistinguishable from onychomycosis. A nail biopsy and nail clippings may be needed to assist in the diagnosis.

Treatment of nail psoriasis depends on the site and severity of disease in the individual, however the results can be disappointing. General principles include avoiding trauma to the nail, keeping the nails short and regular emollients. Taping the nails can help prevent progression of onycholysis. Treatment options for nail bed or nail matrix disease include topical, intralesional, and systemic or biological therapies based on severity of nail disease and coexistent cutaneous or rheumatological manifestations of psoriasis (see table 8).

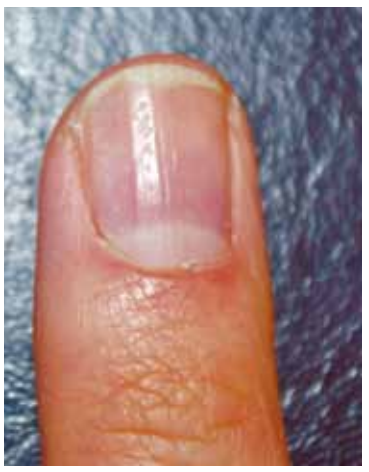

Figure 7. Deep irregular nail pitting of psoriasis.

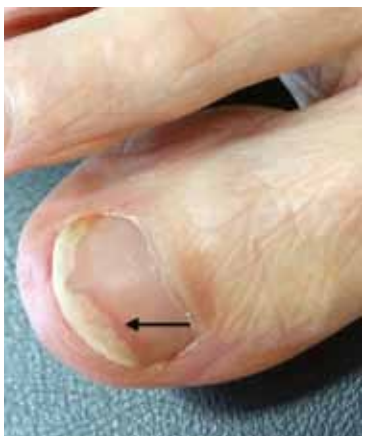

Figure 8. Onycholysis with irregular red-brown onychodermal band proximal to onycholysis.

Figure 9. Note loss of cuticle, nail ridging, and subungual hyperkeratosis and non-specific changes of cutaneous psoriasis affecting the digits.

Table 7. Psoriasis of the nails
(elements in italics are diagnostic of fingernail psoriasis)

Site of disease	Sign	Description
Nail matrix	Pitting (*irregular*) (figure 7)	Pits are large, deep, white detachable scale
	Ridging	Transverse
	Thickening/crumbling	Weakening of nail plate
	Beau's lines	Transverse groove due to intermittent inflammation
	Leukonychia	White nail plate — foci of parakeratosis in nail plate
Nail bed	Salmon patches (*'oil drop' sign*)	Translucent yellow-orange discolouration
	Onycholysis (*with erythematous border*) (figure 8)	Nail plate separates from nail bed
	Splinter haemorrhages	Nail bed capillary damage
	Subungual hyperkeratosis (figure 9)	Nail bed thickening

Table 8. Treatment options for nail psoriasis

Treatment	Nail bed	Nail matrix
General		
• keep short	Yes	Yes
• avoid trauma	Yes	Yes
• use tape	Yes	Yes
• emollients	Yes	Yes
Topicals (under occlusion daily)		
• clobetasol diproprionate 0.05% cream	Yes	Yes
• tazarotene 0.1% cream/ointment	Yes	
• calcipotriol/betamethasone ointment	Yes	
Intralesional triamcinolone acetonide 10mg/mL (0.1ml per digit, maximum four and monthly for six months, then every six weeks for six months, then two-monthly)	Yes (lateral fold)	Yes (proximal fold)
Systemic		
• acitretin 0.3mg/kg/day	Yes	Yes
• methotrexate 15mg/week		Yes
• cyclosporine 2.5mg/kg/day	Yes	
Biologics	Yes	Yes

Brittle nails

BRITTLE or fragile nails are very common and usually affect the fingernails of women. They may be idiopathic or be due to factors that alter either nail plate production or that damage the nail plate.

Idiopathic nail brittleness is associated with an intrinsic defect in the intercellular cement that holds together the nail plate keratinocytes. Women have weaker intercellular keratinocyte bridges than men, and these bridges weaken with old age and with environmental factors that dehydrate the nail plate, including wet work, manicuring and trauma.

Nutritional deficiencies (vitamin A, E and H, zinc, selenium) and eating disorders can cause brittle nails, as can drugs (retinoids, iron, antiretrovirals, penicillamine).

Figure 10. Lamella onychoschizia: distal nail plate splitting horizontally into multiple layers.

Dermatological conditions may produce fragility, and include superficial white onychomycosis, psoriasis, lichen planus, alopecia areata and eczema.

Many systemic disorders can affect the nail, and include vascular diseases, endocrinopathies, chronic infections and amyloidosis.

Signs of nail brittleness include splitting, softness, flaking, crumbling and onychorrhexis (thinning, longitudinal ridging and splitting). In lamellar onychoschizia (see figure 10), the distal nail plate splits horizontally into multiple layers. This is common with frequent handwashing.

Brittle nails may be associated with pain and unpleasant cosmetic appearance of the nails, and can impair daily and occupational activities.

Treatment involves basic principles of reducing trauma and reducing contact with water and detergents. Nails should be kept short and cotton gloves should be worn under rubber gloves during manual work. Nail cosmetics and manicuring should be avoided. Artificial nails are commonly used to cover fragile nails, but can compound fragility because of materials used to apply and remove these agents.

Specific treatment involves addressing the dermatological disease or systemic condition implicated. Oral supplementation with vitamins and amino acids, such as cysteine, may improve nail strength, as may biotin 5-10mg per day for 3-6 months. Iron supplementation can be effective if serum ferritin levels are less than 10ng/mL. Zinc supplementation at 20mg/day may improve brittle nails and silica may improve resistance of the nail plate.

Moisturisers containing urea and alpha-hydroxy acids applied to the hands and nails can increase the water-binding capacity of the nail plate. Lacquers containing hydroxypropyl chitosan or 16% poly-ureaurethane can decrease lamellar splitting of the nail.

Some over-the-counter hardeners can, with prolonged use, make the nail plate more rigid, and are therefore more prone to breaking and peeling.

Ingrown toenails

INGROWN toenails (onychocryptosis) are thought to arise from the imbalance between the widths of the nail plate and the nail bed, and associated hypertrophy of the nail folds. The great toe is most commonly affected.

Juvenile ingrowing toenail is caused by improper trimming of the nail, with lateral spicules of the nail piercing the lateral soft tissue and producing inflammation from perforation of the nail groove epithelium.

Hypertrophy of the lateral lip accompanies long-standing ingrowing nails. Nails are unaffected, but the lateral soft tissue overgrows (see figure 11).

Distal nail embedding occurs after nail shedding resulting from recurrent sporting trauma or nail avulsion. Hypertrophy of the distal soft tissue occurs. New nail can penetrate into this distal wall and cause discomfort.

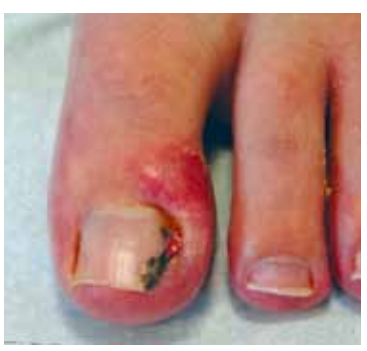

Figure 11. Ingrown toenail with hypertrophy of lateral lip and secondary infection.

Pincer nail (trumpet nail) is characterised by over-curvature increasing the longitudinal axis of the nail. The edges constrict the nail bed tissue and dig into the lateral grooves, causing pain. Causes of pincer nails may be genetically determined or due to foot deformity or osteoarthritis.

Treatment involves educating against prevention with proper trimming of nails and good footwear. Conservative treatments include removing the spicules, massaging the nail folds, and uplifting the lateral nail fold with cotton wool or dental floss tape. Granulation tissue can be prevented with both topical antibiotics and topical corticosteroids, or with cryotherapy or chemical cautery.

If conservative measures fail or the disorder is severe, than surgery is indicated.

If the nail is responsible for the ingrown toenail, then definitive narrowing of the nail plate (nail phenolisation) is preferred. If the condition is caused by hypertrophy of the nail fold, then debulking this soft tissue is preferred.

For pincer nail deformities, a nail brace technique may be required or alternatively, surgical correction may be needed.

Onychogryphosis

ONYCHOGRYPHOSIS affects the elderly with thickening and hardening of the nail plate, usually the hallux in a typical ram's horn shape. It is associated with chronic trauma, poor fitting footwear, neglect, impaired peripheral circulation, and neuropathy.

Treatment addresses chemical avulsion of the nail with 40% urea ointment. The periungual skin is protected with tape, and, after application, the ointment is occluded for seven days. The softened nail can then be removed with clippers.

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Tumours

TUMOURS of the nail unit are either benign or malignant, and can be classified according to the anatomical site of involvement. Common benign tumours include warts, fibrokeratomas (see figure 12), melanocytic naevi of the nail matrix, glomus tumours (see figure 13) and myxoid (mucous) cysts.

Malignant tumours include Bowen's disease, squamous cell carcinoma and malignant melanomas.

Myxoid cysts

These are the most common nail tumours. They are usually located in the proximal nail folds of fingernails and appear as soft, flesh-coloured, cystic small nodules. They can compress the nail matrix and produce nail plate depression with a groove (see figure 14).

They are connected via a tract to the distal interphalangeal joint where there may be associated osteoarthritis. Definitive treatment involves removing the cyst and ligating the connection to the joint. Other options, associated with higher relapse rates, include cryotherapy, intralesional corticosteroid injections, puncture and drainage, and sclerotherapy.

Bowen's disease and squamous cell carcinoma

Bowen's disease — (see figures 15a and 15b) intra-epithelial squamous cell carcinoma — usually affects fingers in older males. It presents as a verrucous periungual or subungual plaque that can ulcerate. It may exhibit crusting and ulceration and

Figure 12. Fibrokeratoma emerging from proximal nail sulcus and growing on the nail causing a well demarcated longitudinal depression.

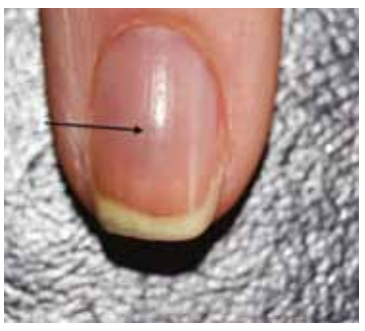

Figure 13. Glomus tumour is a benign vascular neoplasm of the glomus body characterised by small, bluish-red spot with no associated nail deformity. It may be associated with pain and treated with surgical excision.

can lead to onycholysis and longitudinal melanonychia with associated hyperkeratosis.

Squamous cell carcinoma may develop from Bowen's disease and is the most common malignant tumour of the nail apparatus. It presents as a bleeding, ulcerating periungual or subungual mass. Pain may

Figure 14. Myxoid cyst: note nail plate depression and longitudinal groove.

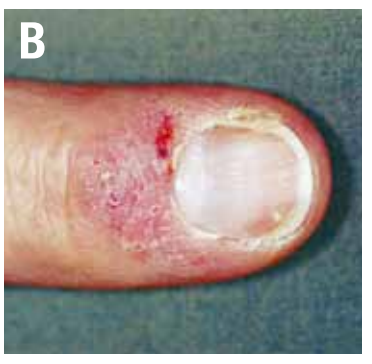

Figure 15. Bowen's disease causing (a) destruction of the nail plate (subungual) and (b) verrucous periungual plaque.
Image courtesy Professor Rod Sinclair.

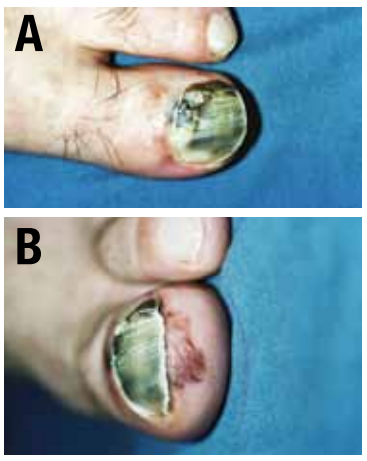

Figure 16. Malignant melanoma of the big toe with Hutchinson's sign: spread of pigmentation on to the proximal (a) and distal (b) nail folds.
Image courtesy Professor Rod Sinclair

be present, but bone involvement is uncommon and lesions rarely metastasise. Treatment involves surgical removal of the entire lesion, with Mohs surgery being the most effective.

If there is bone involvement, then amputation is required.

Melanoma

Melanomas of the nail plate apparatus are rare and account for 0.18-3.5% of all melanomas. They arise, in 76% of cases, from the nail matrix, but can be found in the nail bed and lateral folds.

Presentation is varied (see figures 16a and 16b) and includes longitudinal melanonychia with a blurred margin and varying widths. Hutchinson's sign describes the extension of pigment on the proximal, lateral

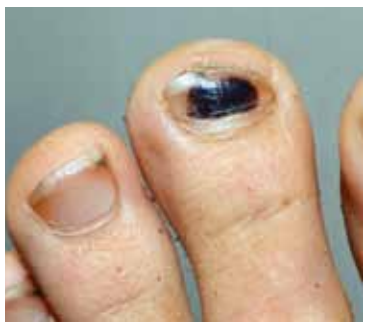

Figure 17. Subungual haematoma: note distal convex edge of the haematoma.

or distal nail folds, and suggests a melanoma. Nail plate abnormalities can result from matrix damage, and subungual lesions can ulcerate and be associated with onycholysis.

Subungual haematomas can mimic melanomas when there is repeated microtrauma to the nail plate. Dermoscopy can assist in diagnosis and discolouration usually moves distally with the nail growth (see figure 17). About 25% of melanomas are amelanotic, have minimal or no pigment and can resemble pyogenic granulomas or ingrowing toenails.

Accurate diagnosis includes clinical findings, dermoscopy and histological confirmation. A punch biopsy of nail bed, matrix or plate can be performed if the width of the band is less than 3mm, but if it is larger than this, a transverse nail matrix biopsy should be used.

Excision margins of these melanomas are controversial and their prognosis is poor, with a 50% five-year survival rate.

Lichen planus

NAIL involvement occurs in 10% of patients with lichen planus, but it is frequently seen in the absence of skin, mucosal or scalp disease. There are numerous clinical manifestations depending on whether the matrix or nail bed is involved, and include nail fragility, longitudinal ridging (see figure 18), thick nails (see figure 19) with onycholysis, post-inflammatory melanonychia, and trachyonychia or 'rough nails' (see figure 20).

Dorsal pterygium, gradual extension of the proximal nail fold over the nail plate with fusion of the nail fold to the nail bed and eventual destruction of the nail plate, can be seen in severe cases. As nail involvement can lead to permanent and extensive nail destruction, early treatment is necessary.

Treatment includes oral prednisolone (0.5mg/kg for 2-6 weeks), systemic retinoids (acitretin), methotrexate or intralesional triamcinolone (10mg/mL) if disease is limited to a few fingernails.

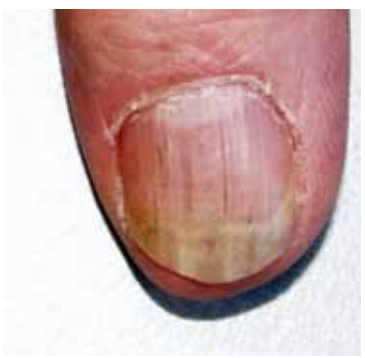

Figure 18. Lichen planus, note early longitudinal ridging.

Figure 19. Lichen planus with severe thickening of nails and melanonychia.

Figure 20. Trachyonychia (rough nails) as seen in alopecia areata but often due to lichen planus.

Yellow nail syndrome

YELLOW nail syndrome is characterised by the triad of yellow nails, lymphoedema and respiratory disease. Respiratory disorders include sinusitis, bronchiectasis, bronchitis and pleural effusions. To diagnose the disorder, two of the three features need to be present either currently or in the past.

The cause of yellow nail syndrome is not known but hypotheses include genetic, immunodeficiency, autoimmunity and paraneoplastic. Nail changes occur in most patients.

Nail findings (see figure 21) include arrested or slow nail growth (less than 0.2mm/week), overcurvature of the nail and absence of the cuticle with mild

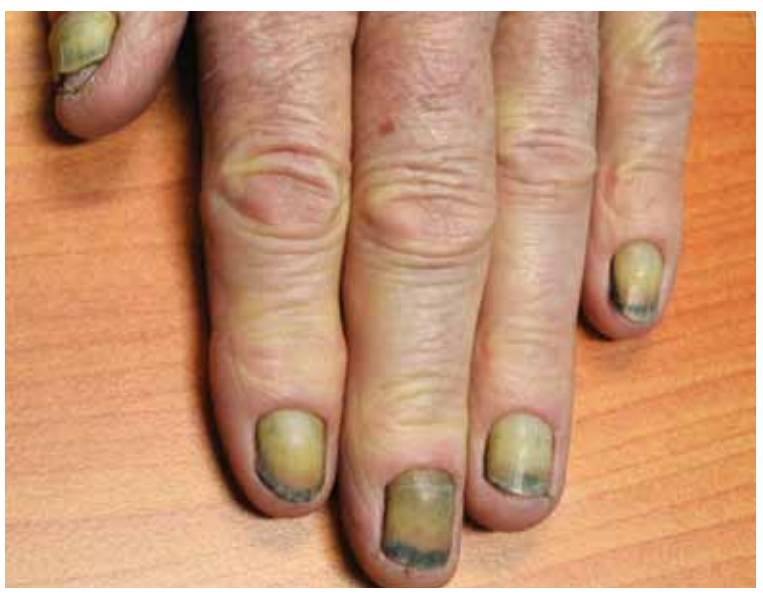

Figure 21. Yellow nail syndrome with overcurvature of the nails, absence of cuticle and yellow discolouration.

paronychia. Secondary onycholysis may occur.

The nail plate is not always yellow, but can range from pale yellow to orange. Initially, several nails may be affected, but eventually all 20 nails will become involved.

Nail lesions can improve spontaneously and can mirror control of respiratory disease. Treatments include vitamin E (1200 IU/ day) and prolonged oral itraconazole (400mg/day for one week a month) or fluconazole (150mg per week).

Nail procedures

NAIL unit disease can be difficult to diagnose. Histopathology can be helpful to obtain a diagnosis for difficult dermatoses affecting the nail. Clinicians are often reluctant to biopsy the nail as there is concern regarding permanent scarring or dystrophy, as well as lack of training in this field. Histology of nail clippings can be used to assist in diagnosis and prevent the need for biopsy. Conditions where this may be helpful include onychomycosis, dermatophytoma, psoriasis and subungual haematoma.

Nail clippings for histology

In order to maximise yield, at least 4mm nail length must be obtained.

cont'd page 24

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As opposed to nail clippings performed for fungal culture, the nail need not be cleaned with an alcohol swab prior to collection. The nail should be cut with a heavy-duty nail clipper, with the specimen extending as far proximally as possible. The nail plate should be placed in formalin and sent for pathology. If fungal culture is required, the subungual debris should be removed with a curette and sent for microbiology (microscopy and culture).

Nail biopsy

A punch biopsy (usually 2-3mm) may be useful to help diagnoses or even treat nail disease. The nail is soaked in warm water for 5-10 minutes to soften the nail. The procedure is then performed after anaesthesia — either infiltrative wing block or proximal nerve block. The nail plate is ideally removed so the area to be biopsied can be visualised. The nail plate can be removed by a bigger punch (4mm) than the intended biopsy size. The biopsy is then performed.

The circular defect need not be sutured, but can be covered by the re-attached nail plate and fold (which must then be sutured in place). A thick dressing should be applied for 48 hours to protect the area from pain or trauma, and to prevent excess bleeding.

Case study

MARLENE, a 50-year-old female shop assistant, presented with a one-year history of a problem with both thumb and right middle finger nails (see figures A and B). She had never previously had either skin or nail problems, but her sister had a history of nail problems. There was no family history of skin pathology. Marlene had seen her GP who had performed nail clippings, which were negative for a fungal infection, but had commenced her on oral terbinafine for six months, with no benefit.

Clinical features revealed onycholysis of all three digits with a brown-red onychodermal band at the proximal border of the onycholysis, suggestive of psoriasis. She had no clinical stigmata of psoriasis.

Marlene was treated with intralesional triamcinolone injected into the matrix on two occasions at three-month intervals. After six months, her thumbnails were remarkably better, however, her middle finger had deteriorated and now reveals dystrophy with subungual hyperkeratosis (see figure C).

A specimen was once again sent for fungal microscopy and culture, and Candida albicans was isolated. She was started on fluconazole 100mg weekly and after three months, dramatic improvement in the nail was noted, with resolution at six months (see figure D).

Nail disease can be the only sign of psoriasis in 5% of patients. Psoriasis of the nail can look identical to onychomycosis, but if fingernails alone are involved, always consider psoriasis over fungal infection.

Traditionally it was thought that patients with psoriasis did not get fungal infection as their nails grow too fast. However, patients with nail psoriasis now have a 50% greater increase risk of onychomycosis than age-matched controls.

Figure A. Thumb nail at presentation.

Figure B. Middle nail at presentation.

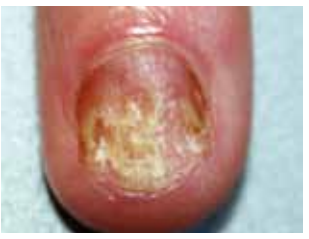

Figure C. Middle nail after six months of intralesional triamcinolone.

Figure D. Middle nail after six months of weekly fluconazole.

Key points

- A single acquired streak of longitudinal melanonychia (cover page) in a white-skinned adult is a melanoma until proven otherwise and requires dermatology assessment and likely a biopsy.
- Squamous cell carcinoma of the nail apparatus is the most common malignant tumour affecting this site. It has a relatively good prognosis and little risk for metastasis.
- Onychomycosis is most commonly due to dermatophyte infection and will not clear spontaneously.
- Onychomycosis of the fingernail is rare in the absence of toenail involvement, and in isolation is more likely to be psoriasis.
- Acute paronychia needs urgent systemic antibiotic therapy to prevent permanent nail damage.
- Chronic paronychia occurs most often with occupations requiring frequent hand wetting.
- Assess the shape of the toe and foot when toenail dystrophy is present and consider podiatry referral as correct footwear/orthotics which can be beneficial.
- Onycholysis left untreated can become chronic regardless of the cause.

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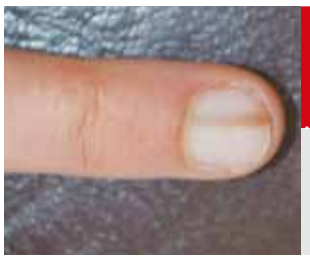

How to Treat Quiz

Ten important nail disorders — 29 January 2016

INSTRUCTIONS

Complete this quiz online and fill in the GP evaluation form to earn 2 CPD or PDP points.
We no longer accept quizzes by post or fax.

The mark required to obtain points is 80%. Please note that some questions have more than one correct answer.

GO ONLINE TO COMPLETE THE QUIZ

www.australiandoctor.com.au/education/how-to-treat

1. Which TWO statements regarding onycholysis are correct?
a) Onycholysis refers to detachment of the nail plate from the nail bed.
b) Onycholysis usually starts at the proximal edge of the nail.
c) Asymmetrical fingernail involvement is more suggestive of a local cause or cutaneous pathology, such as psoriasis.
d) Treatment is aimed at improving the cosmetic appearance of the nail.

2. Which THREE regarding onychomycosis are correct?
a) Clinical features that are highly suggestive of onychomycosis include friable nails and spikes.
b) Toenail infection is seven times more likely than fingernail disease.
c) Onychomycosis of the nails is most commonly a result of *Candida albicans*.
d) Onychomycosis is an infection and should always be treated.

3. Which THREE statements regarding the management of onychomycosis are correct?
a) Oral treatments are generally more effective than topical therapies, but have potential adverse effects and drug interactions.
b) Nail avulsion and debridement can be useful in severe disease, non-dermatophyte mould infection or when dermatophytomas are present.
c) Allowing the nail to grow out, thus ridding the nail bed of the infection, is appropriate in mild cases with only one nail involved.
d) There are no randomised controlled trials as yet to recommend laser therapy for onychomycosis, but numerous lasers have been approved.

4. Which THREE statements regarding paronychia are correct?
a) Acute paronychia presents with swelling, throbbing pain, heat and redness.
b) If episodes of acute paronychia are site-recurrent, staphylococci and — less commonly — beta-haemolytic streptococci should be considered.
c) Chronic paronychia is characterised by inflammation of the proximal nail fold with erythema, oedema and absent cuticle.
d) Treatment of chronic paronychia addresses prophylaxis, maintenance and active therapy.

5. Which TWO statements regarding psoriasis are correct?
a) All patients with skin psoriasis will have nail psoriasis.
b) Toenail psoriasis is easily distinguished from onychomycosis.
c) Irregular nail pitting, onycholysis with an erythematous border, and the 'oil drop' sign are diagnostic of psoriasis.
d) Treatment of nail psoriasis depends on site and severity of disease in the individual, but is generally disappointing.

6. Which THREE are causes of brittle nails?
a) A known gene defect.
b) Idiopathic.
c) Nutritional deficiencies.
d) Drugs.

7. Which TWO statements regarding ingrown toenails are correct?
a) All toes are equally affected.
b) Ingrown toenails are thought to arise from the imbalance between the widths of the nail plate and the nail bed, and associated hypertrophy of the nail folds.
c) Surgery is the preferred initial option as few conservative measures succeed.
d) Treatment involves educating about prevention, with proper trimming of nails and good footwear.

8. Which THREE regarding tumours of the nail unit statements are correct?
a) Myxoid cysts are the most common nail tumours.
b) Subungual haematomas can mimic melanomas when there is repeated microtrauma to the nail plate.
c) About 25% of melanomas are amelanotic with minimal or no pigment, and can resemble pyogenic granulomas or ingrowing toenails.
d) Bowen's disease usually affects fingers and is most commonly seen in older females.

9. Which TWO statements regarding lichen planus are correct?
a) Nail involvement occurs in 10% of patients with lichen planus.
b) Nail involvement is infrequently seen in the absence of skin, mucosal or scalp disease.
c) The effect of lichen planus on nails is transient.
d) Clinical manifestations include nail fragility, longitudinal ridging and thick nails.

10. Which THREE are characteristics of yellow nail syndrome?
a) Yellow nails.
b) Lymphoedema.
c) Cardiac disease.
d) Respiratory disease.

CPD QUIZ UPDATE

The RACGP requires that a brief GP evaluation form be completed with every quiz to obtain category 2 CPD or PDP points for the 2014-16 triennium. You can complete this online along with the quiz at **www.australiandoctor.com.au.** Because this is a requirement, we are no longer able to accept the quiz by post or fax. However, we have included the quiz questions here for those who like to prepare the answers before completing the quiz online.

Australian Doctor Education

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NEXT WEEK

Next week's How To Treat compares the normal paediatric ECG with the normal adult ECG, details the evolution of the trace from paediatric to the adult, and offers tips for interpreting the paediatric ECG. The author is **Dr Christian Turner**, consultant staff specialist, paediatric cardiology and electrophysiology, Sydney Children's Hospitals Network, Westmead, NSW; and clinical associate lecturer, University of Sydney, Westmead, NSW.