

COMMON SKIN AND NAIL CONDITIONS IN THE OLDER ADULT

Skin and nail conditions in aging skin can be detrimental to skin integrity, leaving patients vulnerable to secondary complications, such as tissue breakdown, infection and foot ulceration. In order to prevent these issues, foot assessments should be carried out regularly and any problems dealt with swiftly. The author of this article aims to highlight some of the common skin and nail conditions that commonly present on the foot in older adults.

“Skin contains pain receptors which, when stimulated, forewarn of potential or actual tissue damage by initiating a pain response.”

With an aging population, and an increased life expectancy, older adults often present to the health services with multiple comorbidities and complications associated with disease and/ or age-related degenerative changes.

Foot problems in older adults are common and include the following:

- ▶ Foot deformities secondary to arthritic changes
- ▶ Poor blood circulation due to arterial and venous disease
- ▶ Loss of sensation due to diseases such as diabetes or age-related sensory loss.

Furthermore, dermatological changes frequently present on the foot in older adults (Best Practice Statement, 2012). Skin and nail conditions can be a cause of distress and embarrassment due to their cosmetic appearance. Moreover, many of these skin and nail conditions can negatively impact on skin integrity increasing the risk of secondary complications including:

- ▶ Tissue breakdown
- ▶ Infection
- ▶ Foot ulceration.

Foot problems and inappropriate footwear are also associated with an increased risk of falling in older adults (Cockayne et al, 2014). Thus, a regular foot assessment is important to ensure the timely management of foot problems and prevention of complications.

Aging skin

The skin, the largest organ of the body, has several important physiological functions. Skin acts as a protective layer and a barrier to infection. Skin contains nociceptors (pain receptors) which, when stimulated, forewarn of potential, or actual, tissue damage by initiating a pain response (Best Practice Statement, 2012); the skin also plays an important role in immunity, thermal regulation and vitamin D synthesis (Best Practice Statement, 2012). In aging, the skin undergoes a number of changes. The layers of the skin become thinner, losing dermal collagen and elastin, and there is a reduced blood supply. This results in the skin becoming more fragile and vulnerable to damage. When wounds or injuries develop, the capacity for healing is reduced. Thus, wounds can take longer to heal

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Figure 1. Anhydrosis.



Figure 2. Pressure Lesions over prominent joints of the toes.



Figure 3. Plantar Callus over the 3rd Metatarsal Head (ball of the foot).



Figure 4. Heloma Durum (hard corns) on the tops of the toes.

in older adults due to an impaired ability to produce granulation tissue and a decline in the rate of epithelialisation (Best Practice Statement, 2012).

Common skin conditions of the foot

Anhydrosis

Dry skin (anhydrosis) is commonly observed on the foot in older adults. Anhydrosis may arise due to the underlying ageing process, whereby there is a reduction in sebum production. This means that older skin is less hydrated and aging



Figure 5. Fungal Infection of the skin and nails.

skin is often seen to be dry, flaky and prone to fissuring (Figure 1) (Best Practice Statement, 2012). Anhydrosis can also be associated with systemic disease and illness, including:

- ▶▶ Diabetes mellitus
- ▶▶ Thyroid conditions
- ▶▶ Peripheral arterial disease
- ▶▶ Liver and kidney disease (Best Practice Statement, 2012).

Pressure lesions

In advancing age, foot deformities, including *halluxabductovalgus* (bunions) and toe deformities,

such as hammertoe, often occur secondary to arthritic changes (Menz and Morris, 2015). Increased pressure over prominent joints can cause pressure lesions from footwear which, if left untreated, could result in skin breakdown and ulceration. The need to protect vulnerable areas of the skin and prevent skin breakdown is particularly important in older adults where the capacity for healing is often reduced (White, 2012). Figure 2 illustrates pressure points with reddening of the skin over the 3rd and 5th proximal interphalangeal joints of the toes in the presence of toe deformities.

Callus and corns

Callus and corns are areas of thick, hardened skin that generally occur over areas of the foot that are exposed to friction or pressure. Thus, callus and corns frequently occur over weight bearing areas of the foot such as the ball of the foot (Figure 3) and on areas exposed to pressure/ friction from footwear, such as the top of the toes (Figure 4). Callus and corns can be unsightly, painful and restrict footwear choice and mobility. In older adults, and in the presence of disease such as diabetes mellitus,



Figure 6. Interdigital fungal infection.



Figure 8. Onychauxic nail with subungual haemorrhage.

callus and corns can be prone to tissue breakdown resulting in foot ulceration.

Fungal skin infections

The regular functions of the skin decrease with age; including wound healing, capacity to repair and immune function. Therefore, dermatologic diseases, including skin infections, are frequently seen in older adults (Figure 5) (Zarrin et al, 2010). Risk factors for skin infections in older adults include:

- ▶▶ Peripheral vascular disease
- ▶▶ Trauma
- ▶▶ Immunodeficiency
- ▶▶ Diabetes.

Fungal infection of the foot is common. Dermatophytes are fungi that invade and multiply within keratinised tissues (skin, hair, and



Figure 7. Onychomycosis (fungal nail) affecting several nails on the foot.



Figure 9. Chronic onychocryptosis.

nails) causing infection. Fungal infections tend to target the skin where there is contact with the shoe or between the toes (Figure 6) (Anderson et al, 2010).

Fungal skin infections are not self-limiting, thus they tend to spread in the absence of treatment (Jaulim et al, 2015). Furthermore, because these infections disrupt the skin integrity and provide an avenue for bacterial infection, such as cellulitis, elderly patients with dermatophytic infection should be promptly treated with an antifungal agents (Tan and Joseph, 2004). Topical antifungals are the treatment of choice, though in some cases oral treatment may be required especially if the area affected is extensive (Stollery, 2014).

Common nail conditions of the foot

Onychomycosis

Onychomycosis (fungal nail infection) is a common infection of the nail that is usually caused by dermatophyte fungi infection. Onychomycosis is the most common disease of the nail, representing up to 50% of all nail disorders seen in dermatology practice (Del Rosso, 2014). Fungal nail infection is common, with an overall prevalence of 14%; this figure is higher in the presence of other comorbidities, including obesity, diabetes, psoriasis and peripheral vascular disease. The prevalence of onychomycosis also increases with advancing age; as many as 50% of 70-year-olds are reportedly affected by this nail condition (Del Rosso, 2014).

Fungal nail infections are difficult to manage; left untreated onychomycosis will gradually destroy the nail plate. Treatment is sometimes delayed or refused as this diagnosis is often wrongly perceived as a cosmetic problem and initially fungal nail infections are asymptomatic, so those affected might not seek treatment (Pajaziti and Vasili, 2015). However, with progression the nail plate can become significantly deformed leading to discomfort and pain, particularly when walking and standing. Furthermore, complications can arise with finding suitable footwear to accommodate the nail deformity (Pajaziti and Vasili, 2015). Toenail onychomycosis typically spreads and, as such, frequently affects several nails (figure 7).

Onychauxis

Onychauxis is a thickening of the nail plate. Onychauxis can be painful and cause issues with footwear. Overtime thickened nails can also give rise to complications including:

- ▶ Bleeding under the nail (subungual hemorrhage) (Figure 8)
- ▶ Ulceration under the nail (subungual ulceration)
- ▶ Onychomycosis.

Regular reduction/ thinning of the thickened nail plate is the preferred initial therapy. Surgical removal of the nail might be used as a last resort in complicated cases in order to achieve permanent resolution (Abdullah and Abbas, 2011).

Onychocryptosis

Onychocryptosis, or ingrown toenail, is a common pathology of the toenail (Figure 9). Improper cutting and pressure from ill-fitting footwear are common causative factors. In an older person with impaired arterial circulation and/or diabetes, an ingrown nail may become a serious problem due to secondary bacterial infection (Baran, 2011). Swelling and infection are often present when the nail penetrates the nail fold (Helfand, 2003). Ingrown toenails can be disabling; they are known to cause significant pain and difficulty in walking. Diagnosis is usually evident, but it should be differentiated from subungual exostosis (bony growth under the nail) and tumors of the nail bed. The current standard of care focuses on conservative treatment, including removal of the offending nail in the initial stages and, in cases that are resistant to medical management or are recurrent, surgical correction is the treatment of choice (Khunger and Kandhari, 2012).

Conclusion

Dermatological changes in the foot are commonly observed in older adults. Skin and nail conditions, when associated with advancing

age and various medical conditions, can negatively impact on foot health and general wellbeing. Foot problems can cause poor mobility, increase the risk of falling, cause issues with footwear and day-to-day activities. Furthermore, skin and nail conditions, particularly in the presence of disease, can impact negatively on the integrity of the skin, placing the foot at risk of further complications, including ulceration and infection. A regular foot assessment in older adults is important to ensure the timely management of foot problems and prevention of complications. Effective management of skin and nail conditions can play an important role in improving foot health, increasing quality of life and mobility in older adults while decreasing the risk of complications. **WE**

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