COMMON SKIN CONDITIONS

that are treated by the podiatrist

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There are many skin and nail conditions that affect feet. Some are more serious than others and these skin and nail conditions are treated by the podiatrist and other medical professionals. Some of the more common skin conditions are discussed here in part one of a series of foot and podiatry related topics. Nail conditions will be discussed in the next issue. A short description and treatment protocol is given of each condition. Most of these conditions are best treated by the professionals as self treatment is not always successful and can be dangerous in some cases.

SKIN CONDITIONS

Corns and calluses (hyperkeratosis, clavus, heloma, tyloma, Afrikaans: eeld, litdoring)

Corns and calluses are the most common foot lesions treated by podiatrists. These hyperkeratotic (thick skin) lesions are a thickened stratum cornium layer of the skin in response to pressure and friction and they are actually a normal and natural way for the body to protect itself.

Pathologically they are very similar. A callus generally refers to a more diffuse thickening of the skin, more common under the ball of the foot, whereas a corn is a thicker more focal area, more common on the toes. A corn can occur under and be surrounded by callus. They can also occur under the foot and because of continuous pressure the central cells undergo a change and develop into a nucleus of parakeratosis.

These lesions can be caused by tight footwear, toe deformities such as bunions and hammer toes, bony prominences, and biomechanical or gait abnormalities that cause pressure under different areas of the bottom surface of the foot. There are various types of hyperkeratotic lesions. Corns on top of the toes and calluses under the feet are common. Soft moist type corns (heloma molle) occur between the toes and neural and vascular types (heloma vasculare and neurovasculare) are the more complex types.

Corns and calluses are in most cases painful, but in diabetics and high risk patients they may create serious complications.

Corn on fifth toe

Gross calluses/hyperkeratosis
Treatment
Self treatment should not be attempted. Remedies such as corn paint, cures and plasters will generally only treat the symptom of the corn and not the cause. These preparations generally contain acids that ‘eat away’ the lesion. These preparations are dangerous as they will ‘eat away’ the hard and normal skin. This could lead to an ulcer developing and in diabetics and people with poor circulation infection may occur. This is dangerous to the patient.

The self cutting of corns and callus is also dangerous. It is easy for the person to cut themselves and infection may occur.

What the person can do for themselves is to make sure their footwear fits properly and an emollient can be used on the skin. Padding the area also helps relieve the pressure.

Podiatric treatment would be to determine the cause of the lesion and then to remove the cause.

If the lesion is a physiological (normal) callus then treatment is not necessary. This callus is there to protect the area. If the lesion is a pathological callus then treatment is necessary:
• Regular cutting down of the lesion
• Using padding to reduce pressure
• Advising on proper fitting footwear
• The use of innersoles or orthotics to reduce pressure under the foot
• Referral to the orthopaedic surgeons for correction of any underlying deformities may be necessary.

Heel fissures are caused by dryness and some people are just naturally dry skinned. Factors that predispose people to heel fissures are: prolonged standing, overweight, open back shoes, diabetes, hypothyroidism, and dermatological conditions such as psoriasis and eczema. Neglect of the heels is also a factor in the formation of heel fissures.

Excessive wetness can also cause heel fissures. Excessive sweating can result in soggy skin and perpetually damp calloused heels have poor tensile strength and can just as easily crack.

Self management
• Gentle rubbing of the heels with a pumice stone or sandpaper will reduce the dryness and rough skin.
• Patients must not try and cut the fissure or callus build up and should never pick or peel skin on thickened heel calluses.
• The use of excessively hot water in bathing or showering should be avoided.
• Applying a good emollient after bathing or showering is important.
• The preparation should contain urea and should be used daily. Examples are Nutraplus and Eulactol.
• Open back shoes should be avoided and shoes made from leather and breathable materials are best since they do not contribute to dehydration or excessive sweatiness of the feet.
• If cracks bleed and are painful, antiseptic dressings should be applied and further podiatric help should be sort.

Podiatric treatment
• The podiatrist will painlessly reduce all the hard dry skin by debriding it with a scalpel. This removes all the dry skin fissures and should be done regularly to keep the problem under control.
• The heels are then drilled with a sandpaper disc for extra smoothness.
• Special accommodative innersoles or orthotics are made if the problem is caused by an incorrect walking gait. Soft silicone heel cups will help.
• Patients are then prescribed urea based emollients to use daily and advised to wrap gladwrap around the heels overnight.
• Untreated heel fissures are unsightly and can lead to complications. They are easy to treat and control.

Plantar warts (Verruca plantaris, Afrikaans: soolvrat)
A wart is a viral growth (human papilloma virus, HPV-1, HPV-2 and HPV-4) that can develop on the skin. These wart lesions can develop anywhere on the foot, but typically they appear on the bottom (plantar surface) of the foot, hence the term plantar warts. Warts most commonly occur in children and adolescents. Warts may be in single or multiple lesions. A single wart often increases in size and may eventually multiply forming additional lesions called ‘satellite lesions’. A mosaic type is a cluster of several small warts growing closely together in one area.

These warts are caused by direct contact with the human papilloma virus (HPV) which is the same virus that causes warts on other areas of the body. This virus is acquired in public places where people go barefoot, such as locker rooms, swimming pools, and karate classes. It can also be acquired at home if other family members have the virus.

Signs and symptoms
The wart lesion may resemble a callus or corn because of its tough, thick tissue. This is where a misdiagnosis is common.

The wart lesions under the foot are usually painful on standing and weight bearing activity. Pain is also felt when the sides of the wart are squeezed. A corn is usually painful on direct pressure.

Tiny black dots often appear on the surface of the wart. The dots are actually dried blood contained in the capillaries (tiny blood vessels) in the wart. When the lesion is pared down these blood vessels show pinpoint bleeding.

Because plantar warts grow under the feet they get pushed backwards into the sole of the foot. The sensation is that they are growing up into the tissue.
Treatment

Many warts may clear up on their own, which may take up to two years.8,10 If the lesions are growing bigger or spreading then treatment is necessary.

The first level of treatment is using acid preparations8 to destroy the wart. There are many of these preparations available OTC and mixed by the pharmacist. The treatment may take some time to work but this treatment is fairly gentle on the patient. Patient compliance is usually one downfall of this treatment modality.

Duofilm® (salicylic acid) is useful for home treatment of warts. Transversal wart patches are salicylic acid patches that are placed on the wart for three to twelve weeks to eradiate the lesion. Stronger acids/keratolytics such as monochloroacetic or trichloroacetic acid8 are used by the podiatrist.

An aqueous solution of formalin (2–3%) is useful on plantar warts8 especially the multiple type.

Cryosurgery (freezing) is also widely used. The liquid nitrogen (-197°C) is sprayed onto the lesion two to six times and hopefully the lesion will be resolved.8 Some practitioners inject local anaesthetic under the lesion first to reduce pain and enhance the freezing mechanism of the modality. The cryopen is a user friendly delivery system for cryosurgery that has the added advantage in that it is easy to move the unit around with you. It uses nitrogen gas that is delivered under pressure onto the lesion.

Electrocautery is also used to destroy the wart lesion. It is necessary to infiltrate a local anaesthetic under the lesion first. The results are reasonably good making this a good modality to use. It is possible but not easy to use this modality on small children.

Other treatments include laser therapy, surgery, and a variety of dermal preparations like benzoyl peroxide, fluorouracil, topical tretinoin and podophyllin.8

Warts are traditionally difficult to eradicate so perseverance is necessary. There are also many folk/self-help remedies that patients use on warts. Patients should be aware that these remedies remain unproven and may be dangerous. Patients should not try and remove their own warts.

Blisters (Afrikaans: blaas)

Blisters are fluid filled areas that develop under the skin in response to friction. The body responds to the friction by producing fluid under the skin as a protective mechanism.11 These blistered areas become irritating and painful.

Blisters are common in athletes, especially those running long distances like The Comrades marathon, walkers and when wearing-in new shoes.

Some common causes are: heat, moisture and friction from shoes and socks, allergic reactions, burns and excessive foot perspiration.

Prevention is better than cure. Shoes should fit properly and socks (cotton or wool) be changed regularly. Feet should be kept as dry as possible with the use of foot powder. The wearing of wet shoes, boots and socks should be avoided as this will increase the chance of developing blisters.

There are many plasters and dressings that can be used to protect areas of friction and pressure.

Treatment

If a blister is small and not leaking fluid it should be left alone. The blister will be reabsorbed and heal on its own. Protecting it from further friction or pressure will make it more comfortable.

If the blister is large and going to pop open by itself then it must be treated. The area should be cleaned with an antiseptic and the blister opened with a sterile scalpel blade or needle.12 The roof of the blister should not be removed as it protects the area during healing. All the fluid should be drained and the area dressed with an antiseptic dressing daily until healed.

These lesions sometimes become septic, usually because of poor cleaning and dressing procedures. If this happens then an antibiotic cream/ointment must be used. Oral antibiotics are sometimes also necessary.

There are many old fashioned home remedies for blister treatment. Some may work and some may not work, so treatment is best left to the professionals. Prevention of further friction and pressure is important.

People with diabetes may not feel these blisters because of loss of sensation in the feet (neuropathy) so professional foot examination and treatment of these lesions is important.

Fungal infections (athlete’s foot, tinea pedis, ringworm, Afrikaans: voet swam)

Fungal infections of feet are very common skin conditions that many people will develop at least once in their lives.6,13 Athlete’s foot occurs more amongst teenage and adult males and more in diabetics and people that work or exercise in warm, wet conditions. Moisture, sweating and lack of proper ventilation of the feet present the perfect setting for the fungus of athlete’s foot to grow in.

Signs and symptoms

Common signs and symptoms are: itching, scaling, redness, small blisters and in some cases odour. The areas in between the toes seem more prone to fungal infections13 than other areas of the foot.

Predisposing factors

The fungus that causes athlete’s foot grows in moist, damp places. Sweaty feet, not drying feet well after swimming, running, or bathing, tight shoes and socks, and a warm climate all contribute to the development of athlete’s foot.
Toenails can also be infected with fungus and will be discussed in the nail section of this article.

**Diagnosis**
The diagnosis of athlete’s foot is usually a clinical one. The area will be macerated (wet), peeling, itchy, blisterly and may smell. Secondary bacterial infection may occur.\(^6\)

If there is any doubt then a skin scraping must be taken and sent to a laboratory for analysis.\(^6,14\) The laboratory result will confirm a fungal infection or not, and identify the causative fungus. Simple microscopy of a skin specimen can be done in practice using a microscope.

**Treatment**
Once a diagnosis is made an antifungal cream or ointment will be prescribed. Theazole antifungals are still widely used.\(^15\) Modern antifungal preparations are very good in the treatment of athlete’s foot. What is considered to be revolutionary treatment for athlete’s foot is the new Lamisil Film Forming Solution Once. This product which is applied only once will remove the problem of patient non-compliance with continual applications of antifungal preparations. The reoccurrence rate\(^6\) of re-infection is generally high if not treated properly.

In severe cases of fungal infections an oral antifungal may be necessary.\(^16\)

**Prevention**
Feet should be washed and dried very carefully and thoroughly in between the toes. A light sprinkle of powder will help keep this area dry. Normal drying powders or a mild antifungal powder can be used.\(^5\)

Diabetics should inspect their feet daily for any signs of fungal infections or changes, lesions or any skin conditions.

**Chilblains** (pernio, perniosis, erythema pernio, Afrikaans: wintersvoete)
Chilblains are a vasospastic disorder where the small blood vessels in the skin constrict forming a painful reddish bluish lesion on the skin.\(^6\) Chilblains are more common in cold temperate humid climates. They also develop more commonly in people with poor circulation and those that are exposed to cold temperatures. Some people are more susceptible to chilblains. Younger girls and older ladies seem more likely to get them. The reason for these patterns of occurrence is not known.

**Signs and symptoms**
Chilblains appear as a small itchy/painful red/blue area on the skin.\(^7\) They are common on toes but can affect fingers, the nose and the ears.\(^6\) Chilblains start during sudden cold spells and initial symptoms include burning and itching. These symptoms often intensify when the area is warmed up. In some cases the chilblain may break down and become an ulcer. Infection may develop and healing is often retarded because of the vasospasm.

**Prevention**
- Keeping the feet warm in a natural way is important in the prevention of chilblains.
- Leg warmers, woolen socks, sheepskin slippers etc should be used.\(^6\)
- Feet should not be put in front of a heat source when they are cold.
- Feet should not be exposed to direct heat such as heaters, fires and hot water bottles.
- Smoking should be stopped. Smoking can also predispose one to chilblains as it reduces peripheral circulation.

**Self management**
- Chilblains should not be rubbed or scratched.
- Direct heat should be avoided but the feet should be kept warm by the use of woolen socks and footwear.\(^6,17\)
- Soothing lotions such as calamine lotion may be used.
- If the skin is broken, an antiseptic dressing to prevent the chilblains becoming infected should be used.
- Anyone that is high risk such as diabetics or anyone with poor circulation should get professional help from a podiatrist.
- Circulation may be improved with exercise and smoking should be stopped.

**Management**
- Patient education is important.
- Padding and pressure relief may give some relief for the chilblain symptoms.
- Topical steroids may need to be used in case of very swollen severe chilblains.

- Corns and calluses are common in the pressure areas where chilblains can occur, so reduction of these will give some pain relief.
- Care must be taken not to cause bleeding in the patient.
- Heparin ointment may be used in some people to improve the circulation in the area.
- Sometimes chilblains may be a symptom of other medical conditions such as Reynaud’s phenomenon.

**Palmarplantar keratoderma** (eratoderma, keratosis palmaris et plantaris)
Keratoderma is a term that means marked thickening of the skin, and palmarplantar refers to the skin on the soles of the feet and palms of the hands.\(^6\) These areas are affected most often. There are many types of keratodermas and classification depends on whether or not it is inherited and its clinical features.\(^19,20\)

Diffuse keratodermas affect most of the palms and soles. Focal keratodermas mainly affect pressure areas. Punctate-type keratoderma results in tiny bumps on the palms and soles.\(^20\)

Most often the abnormal skin involves only the palms and soles (non-transgradient) but sometimes it extends on to the top of the hands and feet as well (transgradient).
There are many types of inherited and acquired plantarpalmar keratodermas so for the sake of simplicity this condition will be discussed generally.

Symptoms
Patients present with gross and painful hyperkeratotic lesions on feet, or hands and feet.

Treatment
The treatment of hereditary and non-hereditary types is difficult. The most common therapeutic options only result in short-term improvement and are frequently compounded by unacceptable adverse effects. Treatment tends to be symptomatic and may vary from simple measures (e.g. saltwater soaks, paring) to topical keratolytics, systemic retinoids, or reconstructive surgery with total excision of the hyperkeratotic skin followed by grafting. The mainstays of treatment include the following:

- Topical keratolytics (e.g. salicylic acid 5%, lactic acid 10%, urea 10–40%) are useful in patients with limited keratoderma.
- Topical or oral retinoids are effective, but treatment is often limited by skin irritation.
- Consider potent topical steroids with or without keratolytics in dermatoses with an inflammatory component.
- Careful selection of footwear for comfort and treatment of any concomitant fungal infections is important.
- Regular dermabrasion by the podiatrist will reduce pain and may permit increased penetration of topical agents.
- Soft shock absorbing innersoles may also help.
- Carbon dioxide laser treatment may be beneficial in persons with limited keratoderma.

Pitted keratolysis
Pitted keratolysis is a skin disorder that usually affects younger people, especially athletes or those who spend prolonged periods in occlusive footwear. Bacterial species in the Corynebacterium and/or Micrococcus families invade the stratum corneum (the superficial “dead” part of the skin) and excrete exoenzymes (keratinase), which digest the keratin, creating the characteristic pits shown in the figure and producing a foul odour. These bacteria produce porphyrins that reveal bright coral-pink fluorescence in the pits under Wood’s light, which confirms the diagnosis. A false-negative result may occur if the patient has recently washed the feet. For this reason, a late-afternoon examination of the feet may be the most revealing.

Secondary fungal infections may be there because of the moisture

Management
Most cases respond well to a twice daily application of a topical antibiotic (clindamycin, mupirocin or erythromycin) for one to two weeks. Systemic antibiotics may be necessary in severe cases (clindamycin or erythromycin). Gels seem to be somewhat more effective than lotions but may be significantly more irritating if the inflammation and pitting are particularly severe.

If there is a concomitant fungal infection then the use of an antifungal preparation is necessary along with the antibiotic therapy.

Moisture management of the feet is also important.

Shoes may harbour the smell forever and will need to be washed regularly or replaced.

References: