
REVIEW

MANAGEMENT OF LEG ULCERS

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SUMMARY

This article aims at describing a methodical approach to leg ulcer management in the primary care setting. The key information that you want to elucidate from history and examination will be recapped. The three main types of ulcers – venous, arterial and diabetic – will then be examined in more detail and the management of each will be discussed. Care of people with skin problems requires GPs to:

- Ensure that skin problems are not inappropriately dismissed as trivial or unimportant by healthcare professionals;
- Empower patients with chronic skin problems, including managing the effects of disfigurement;
- Demonstrate appropriate history-taking for patients with skin problems, including past personal history, family history, chemical contacts, occupation and drug usage;
- Value the role of other members of the primary healthcare team (e.g. specialist health visitors for eczema and wet wrapping, district nurses/nurse practitioners for leg ulcers and wound management);
- Recognise the huge prevalence of skin disease in the community and its impact on patient's lives and healthcare resources;
- Understand and implement the key national guidelines that influence healthcare provision for skin problems. An ulcer can simply be defined as erosion in an epithelial surface. Most commonly, they are an external manifestation of an underlying pathological process. Ulcers in the lower limb are often caused by venous stasis, arterial insufficiency and diabetes. It is vital to identify the underlying process as this will guide subsequent treatment.

Key words: leg ulcer, arterial ulcer, venous ulcer, diabetic ulcer

RÉSUMÉ

La gestion de l'ulcère de la jambe

Cet article vise à décrire une approche méthodique pour la gestion de l'ulcère de la jambe dans le cadre des soins primaires. Les informations clés que vous souhaitez pour élucider l'histoire et l'examen seront récapitulées. Les trois principaux types d'ulcères - veineux, artériel et diabétique - seront ensuite examinés plus en détail et la gestion de chacun sera discutée. Soins des personnes ayant des problèmes de peau nécessite à:

- Veiller à ce que les problèmes de peau ne pas indûment rejetés comme trivial ou sans importance par les professionnels de la santé;
- Responsabiliser les patients avec des problèmes chroniques de la peau, y compris la gestion des effets de la défiguration;
- Démontrer anamnèse appropriée pour les patients ayant des problèmes de peau, y compris les antécédents personnels, les antécédents familiaux, les contacts chimiques, l'occupation et l'utilisation des médicaments;
- Valoriser le rôle des autres membres de l'équipe de soins de santé primaires (par exemple les visiteurs de santé spécialisés pour l'eczéma et l'emballage humide, les infirmières de district / infirmières praticiennes pour les ulcères de jambe et le traitement des plaies);
- Reconnaître l'énorme prévalence de la maladie de la peau dans la communauté et de son impact sur la vie des patients et des ressources de soins de santé;
- Comprendre et mettre en œuvre les lignes directrices nationales clés qui influent sur l'offre de soins pour les problèmes de peau; Un ulcère peut être simplement défini comme l'érosion dans une surface épithéliale. Le plus souvent, ils sont une manifestation extérieure d'un processus pathologique sous-jacent. Les ulcères dans le membre inférieur sont souvent causés par la stase veineuse, l'insuffisance artérielle et le diabète. Il est essentiel d'identifier le processus sous-jacent car il guidera le traitement ultérieur

Mots clés: ulcère de la jambe, ulcère artériel, ulcère veineux, ulcère diabétique

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ASSESSMENT OF THE PATIENT WITH A LEG ULCER

History

A thorough history is vital to establish the nature of the ulcer. Questions about the ulcer itself should include: when it began, whether there was any preceding trauma, whether it is painful and how it has affected their mobility. Questions should then be directed towards potential causation: do they have any other systemic disease such as varicose veins, peripheral vascular disease or diabetes? Do they suffer from claudication? Have they experienced impotence? What is their nutritional state? Are they on any medication that may impair their wound healing? Do they spend long periods of time standing?

Examination

The ulcer: Features of the ulcers can give further clues as to its aetiology. Important features to note on examination include: site, size, edge, base, exudate and surrounding skin changes. More detail on this can be found in [table 1](#).

Vascular exam: The patient's lower limb pulses from femoral to dorsalispedis should be examined. If they are not palpable then a Doppler should be used. If the sound is triphasic the flow is excellent, if biphasic the flow may be adequate but if monophasic then the patient should be referred to a vascular surgeon for further assessment.

Musculoskeletal exam: This is helpful because it can give an indication of how the ulcer may be impacting on this patient's mobility. The Achilles tendon can shorten in diabetics because of glucose binding to the collagen in the Achilles tendon making it less flexible. For this reason, the mid- and forefoot can be under additional stress making it more prone to ulceration. A neurological examination should also be incorporated. Sensation over the major nerve territories should be assessed. This is of particular relevance when a diabetic ulcer is suspected

Investigations

Work-up should begin with bloods including a full blood

count, urea and electrolytes, blood glucose, liver function tests including albumin (to assess nutritional state). Avascular ulcer is suspected then a rheumatological screen would be helpful. If there is any evidence of infection then swabs should be sent for microscopy, sensitivity and culture.

If an arterial ulcer is suspected then an ankle brachial pressure index (ABPI) test should be performed. An ABPI of less than 0.8 warrants a referral to a vascular surgeon for further investigation. It is worth remembering that in diabetics the ABPI can be falsely normal due to incompressible arteries secondary to plaques and calcification. It is also worthwhile performing an ABPI if you think the patient will require compression stocking as an ABPI of less than 0.8 is a contraindication. If the ulcer appears to be deep, particularly in the context of suspected diabetic ulcers, an x-ray should be performed to rule out osteomyelitis.

Management

Venous ulcers

The vast majority of patient with venous ulceration can be managed in the primary care setting. A patient should be referred on to secondary care if the diagnosis is uncertain, if there is mixed venous and arterial disease (refer all people with an ABPI of less than 0.8 and refer urgently if ABPI less than 0.5) or if the ulcer is suspected to be malignant, associated with rheumatoid arthritis or diabetes. The management of venous ulcers should be multidisciplinary and where available, leg ulcer nurse specialists can improve standards of care. (Simon, Dix, & McCollum, 2004)

National Institute for Health and Care Excellence (NICE) guidelines (NICE, 2015a) on venous ulcers state that uncomplicated ulcers should be cleaned, dressed and have compression therapy applied. This should be complemented with life-style advice and active follow-up to check for failure to respond to treatment or complications.

The ulcer should be cleaned at each dressing change. Either warm tap water or saline can be used. It's worth noting that a strict aseptic technique is not required and a recent Cochrane review showed that tap water was in fact more effective than normal saline in prevention infection in adults with acute wounds (Fernandez & Griffiths, 2008). As a general rule, chemical agents such as hydrogen peroxide

Table 1- Characteristic features of common ulcers

Characteristic	Venous	Arterial	Diabetic
History	Rapid onset. Often associated varicosities	Slow progression Associated atherosclerosis	Diabetes mellitus
Site	Medial malleolus	Lateral aspect great and 5 th toes, lateral malleolus and dorsum of foot	Usually on plantar surface of foot over metatarsal heads or heel
Edge	Irregular	Even or 'punched out'	Variable
Surface	Yellow exudate	Dry and necrotic	Necrotic base
Surrounding Skin	Venous eczema, haemosidrosis, lipodermatosclerosis, atrophie blanche	Dry pale skin with hair loss	Thin dry skin
Pain	Moderately painful - pain relieved on elevation	Extremely painful - pain increased with elevation and exertion	Painless Associated paraesthesia

and iodine should not be used. However, when the ulcer is malodorous, the NICE guidelines suggest that a potassium permanganate 0.01% soak can be beneficial.

Dressings for venous ulcers should only be applied by a professional that has appropriate training. More often than not dressings are managed by a combination of district nurses, specialist vascular nurses and footcare teams. Poor patient selection and incorrect application can result in significant morbidity for the patient. Compression therapy is only appropriate for patients with an ABPI of less than 0.8. If a patient has evidence of both venous and arterial disease then it can be helpful to seek a vascular opinion to guide management as compression therapy in the context of arterial disease can result in critical ischaemia with limb loss.

It is important that a low-adherent dressing is applied directly over the ulcer to reduce the discomfort experience when having dressings removed. There are a variety of dressings available to suit a particularly exudative or sloughy ulcer. A good dressing over the ulcer can improve the wound healing (Jones, Grey, & Harding, 2006) so be guided by the specialist teams in your area.

A compression dressings should then be applied over the wound dressing. These generally comprise of a below-knee, graduated compression bandage that has to be changed once a week. The pressure is greatest at the level of the ankle and decreases as it rises up the leg. They work by reducing venous reflux therefore increasing venous return and improving the microcirculation in the lower limb. (Rajendran, Rigby & Anand, 2007)

In their guidelines on venous ulcers, NICE recommend that uncomplicated venous ulcers should be reviewed weekly for the first two weeks after treatment has commenced (NICE, 2015a). If there is a good response to treatment than less frequent follow-up can be organised at the discretion of the district nurse.

Oedema and venous eczema can be troublesome features of venous disease. It is widely agreed that advising the patient to elevate their legs when possible can help with the dependent oedema often seen in this context. It is important to note that diuretics are not helpful for leg oedema that is purely dependent. NICE recommended in their venous ulcer guidelines that an emollient and a mild to moderate potency topical corticosteroid ointment should be used under compression dressings for venous eczema. If symptoms do not improve then referral to dermatology could be considered.

There is no strong evidence base for what lifestyle advice should be given to those with venous ulceration. In general, the patient should be encouraged to keep mobile and wear good fitting footwear. If they no longer require compression bandages, they should consider wearing compression stockings. If they are smokers then the impact of smoking on wound healing could be explained.

Arterial ulcers

In contrast with venous ulcers, arterial ulcers generally

require more input from secondary care. Development of an arterial ulcer signifies advanced peripheral vascular disease and as such, they will require review by a vascular surgeon. If referring a patient with a suspected arterial ulcer, it is helpful to include results of both Doppler examination and ABPI testing in both lower limbs.

In order to treat an arterial ulcer, the root cause must be tackled. Debridement of an arterial ulcer can be detrimental to its overall condition. This is because debridement of the ulcer in the absence of adequate arterial inflow just enlarges the ulcerative area when resources for healing are not available and may worsen ischaemia by increasing the metabolic demand. (Treiman, Oderich, Ashrafi & Schneider, 2000)

Dressings for arterial ulcers are often best determined by specialist nurses. When there appears to be sufficient blood supply to support healing then a dressing that will maintain a moist wound healing environment is appropriate. When there is dry gangrene then it is best to leave the ulcer dry until revascularisation is successful. (Hopf, et al, 2006) There is no definitive evidence to demonstrate the superiority of one type of dressing over another with regards to arterial ulcers. (Forster & Pagnamenta, 2015) Dry dressings should be used with caution as they can cause desiccation of the wound and newly formed granulation tissue can be inadvertently removed when the dressings are changed. (Vranckx, et al, 2002)

Pain can be a prominent feature of arterial ulcers. The best way of treating this is to relieve the stenosis. Any patient experiencing persistent rest pain should be assessed by a vascular team urgently as this can be evidence of critical ischemia. The pain generally begins distal to the obstruction and around the ulcers and progresses proximally. The patient may look to their GP for support with pain management and large doses of pain relief may be required. The pain ladder should be used and adjuncts to treatment neuropathic features should also be considered. It can also often be helpful to seek input from a dedicated pain team.

With respect to arterial ulceration, GPs play a key role in educating patients about the link between smoking and peripheral artery disease. Smoking more than doubles an individual's risk of developing peripheral artery disease. (Lu, Mackay & Pell, 2013). In patients who have peripheral arterial disease, those who smoke are more likely to be symptomatic and experience symptoms 10 years earlier than those who are non-smokers. (Schmieder & Comerota, 2001)

For those patients who give up smoking, there is a demonstrable improvement in symptoms even for those who do not undergo operative management. In a study of patients with Peripheral Vascular Disease (PVD) who did not undergo surgery, one group were given advice including cessation of smoking, exercise, low cholesterol diet and vitamin E therapy. 85% of the patients who stopped smoking showed an improvement in symptoms compared with only 20% amongst those who continued to smoke. (Birkenstock, Louw & Terblanche, 1975) By highlighting the benefits that can be gained from smoking cessation, GPs can prevent further progression of the peripheral vascular disease.

Diabetic ulcers

It is estimated that around 10% of those with diabetes will develop a diabetic foot ulcer at some point in their lives. In general, the risk of developing a lower limb ulcer is increased in the diabetic population because of diabetic neuropathy but also because of concurrent peripheral vascular disease. It is thought that people with diabetes are twice as likely to have PVD as those without diabetes. (Gregg, et al, 2004)

It is not uncommon for diabetic foot ulcers to go unnoticed by the patient as they are characteristically painless. It is therefore vital that the GP takes a proactive role when assessing and monitoring diabetic patients. It is well recognised that the earlier a diabetic ulcer is identified, the more effectively it can be treated.

It is also important for GPs to know when they should refer on for specialist advice. NICE have released guidelines on diabetic foot ulcers in August 2015 (NICE, 2015b). They suggest that for those with diabetes, their risk of developing a diabetic foot problem should be assessed when the diabetes is diagnosed and annually thereafter; if any foot problems arise and on any admission to hospital. On these occasions, patients should be assessed for the following risk factors: neuropathy, limb ischaemia, ulceration, callus, infection, inflammation, deformity, gangrene, Charcot arthropathy. The patient's risk can then be stratified as: low – if there are no risk factors present; moderate - if one risk factor is present or high –if more than one risk factor present or previous ulceration or amputation or if they are on renal replacement therapy. The patient's level of risk can guide how they are best managed. For low risk patients, annual foot assessments should be carried out. It is vital to emphasize the importance of foot care and to educate about the features of a worsening foot. The foot protection service should be contacted for those who are at moderate or high risk. For patients at moderate risk, a reassessment of their feet should be carried out every 3-6 months. For those at high risk, reassessment will need to take place more frequently, for example every 1-2 months.

Treatment of a diabetic ulcer is multi modal and should include: Optimising the control of diabetes, offering pressure redistributing devices or footwear, controlling infection and ischaemia and ensuring that the wound is appropriately dressed.

The provision for foot protections services is variable. It is well recognised that a multidisciplinary team approach greatly improves the outcomes for diabetic foot ulcers. (Krishnan, et al, 2008)

It is important to identify the pathways and other teams available in your locality, for example: podiatrists, diabetes specialist nurses, vascular nurses, tissue viability nurses.

Key points

- Lower leg ulcers are a common problem and are often indicative of underlying systematic pathology.
- A focussed history and detailed examination will

help with diagnosis

- Venous ulcers are mainly managed in the community
- Arterial ulcers are more likely to require specialist input from the vascular team
- Diabetic ulcers should be managed by a multidisciplinary team and monitored carefully for any change

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