

THE MULTIPROFESSIONAL TREATMENT OF A PATIENT WITH ARTERIAL LEG ULCERATION

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Arterial leg ulcers are primarily caused by insufficient arterial blood flow to the tissues causing ischaemia, ulceration and, eventually, tissue necrosis.

The most common cause is atherosclerosis which is a chronic, progressive disease involving the deposition of cholesterol (plaque) along the lining of the artery wall (Siegreen, 2004). Risk factors for developing atherosclerosis are often related to lifestyle and include smoking, hypertension, hyperlipidaemia, obesity and diabetes.

Acute arterial ischaemia, on the other hand, has a rapid onset and is associated with an embolic episode. Part of a plaque becomes dislodged from the arterial wall and travels in the blood until it becomes lodged in one of the small blood vessels. The resulting blockage means



Figure 1. Bilateral arterial leg ulceration

that the tissues are starved of oxygen and nutrients and become ischaemic and die. This case study highlights the complexities of managing a patient with arterial leg ulceration caused by atherosclerosis.

PATIENT DETAILS AND HISTORY

The patient was a 78-year-old woman who lived alone. Her general health status was good although she had been a heavy smoker until six years before. She was a very active lady and enjoyed life to the full; however,

she had begun to experience cramp-like pains in her calves three years before, which worsened when walking uphill. In the previous six months she had developed ulcers on both her lower legs, requiring treatment from the community nursing team. Despite a variety of treatment options, the

ulcers failed to heal and she was referred to a vascular surgeon for further investigations and treatment options.

ASSESSMENT AND TREATMENT OBJECTIVES

The patient presented with multiple ulcers on both legs. With a case such as this, assessment should focus on determining the ulcer aetiology. It is important to take a clear history to determine venous or arterial disease indicators and assess the ulcer and the peri-ulcer skin integrity. The nature

and intensity of the pain and the affect on quality of life should also be assessed and recorded.

The patient's history suggested an arterial atheromatous pathology with signs of progressive disease. The pain she described suggested intermittent claudication, with smoking being a high-risk factor for development of the disease. The ulcer beds were covered in thick, stringy slough (*Figures 1 and 2*) which continued to reappear despite autolytic wound debridement using hydrogel dressings. The skin looked pale and the legs were hairless due to the poor blood flow to the tissues.

Pain is one of the significant features of arterial leg ulceration. The patient reported that she was being kept awake at night and needed to hang her legs out of bed or sit in a chair to gain any kind of pain relief. It was also noted that she had muscle wasting, often a sign of immobility and in this case, probably due to the pain experienced during exercise.

A hand-held Doppler assessment was performed to aid diagnosis. This should be used in conjunction with the initial assessment to support findings and not used in isolation. Results showed that the arterial blood flow in both of the patient's legs was compromised. The ankle brachial pressure index (ABPI) was 0.47 on her right leg and 0.54 on her left indicating a significant reduction in lower limb blood flow (in normal healthy arteries the ABPI is one). The Doppler signals were monophasic; also an indication of reduced blood flow.

An arterial duplex scan confirmed this and found significant occlusive disease in both legs. Duplex ultrasonography is a non-invasive, safe method of vascular assessment which is used for initial screening once hand-held Doppler assessment has been performed and the findings warrant further investigation. Further interventions required more invasive techniques using angiography, which provided a more detailed picture of the underlying pathological problem. It showed generalised atheromatous plaques in both legs. Her right superficial femoral artery (SFA) had a 50% stricture and her left SFA was completely occluded.

The treatment objectives were:

- ▶▶ To improve the blood flow to the patient's lower limbs in order to encourage healing
- ▶▶ The pain needed to be controlled through appropriate medication, reassurance and reperfusion of the blood supply
- ▶▶ To debride the slough from the ulcer bed.

TREATMENT

The patient's arteries were amenable to angioplasty, a radiological intervention used to dilate arteries and improve blood flow. There are risks associated with this procedure and in a small number of cases it could result in loss of limb. Patients need to be fully informed of this before they give consent.

With the blood flow improved it was hoped that the ulcers would remain free of slough and begin to show evidence of healing. The treatment objective following reperfusion of the limbs was to remove the



Figure 2. Ulcer on right leg showing degree of slough.



Figure 3. Larval therapy.



Figure 4. Post-larval therapy.

devitalised tissue as quickly as possible to reduce the risk of infection and promote healing.

During the debridement process pain was controlled using a combined analgesia regimen with long- and short-acting morphine.

Dressings

A number of dressing regimens had been tried in the past with little effect and the patient did not wish to have the ulcers surgically debrided. It was therefore decided to use larval therapy in an attempt to achieve rapid removal of slough and to prepare the ulcer beds for healing (Figure 3).

It is interesting to note that the increased exudate produced through the use of larval therapy can 'wash out' the bacteria on the wound surface and reduce the need for a peripheral blood supply to remove non-viable matter (Morgan, 1995).

Larval therapy was applied to the leg and covered by a full leg

protective boot (to prevent the larvae from escaping) which was left in situ for three days. A crepe bandage was then applied to hold everything in place.

After three days, the ulcer beds were almost completely free of slough (Figure 4). The patient's pain levels had decreased and as a result she was able to increase her mobility.

OUTCOMES

The patient was transferred to a community hospital for further rehabilitation but her progress was slow. She was discharged but was readmitted within a month as the ulcers had deteriorated although not to the same extent as on presentation. The patient liked to be independent but this influenced her ability to rest her legs. Her legs improved while she remained in a care environment but whenever she returned home they broke down again. Unfortunately the atheromatous plaques returned and subsequent angioplasties failed. The ulcer beds remained

clean and manageable but complete healing was not achieved. The patient refused amputation and made an informed decision to live with her leg ulcers.

CONCLUSION

Patients with arterial ulceration require a multiprofessional management approach. The severity of the disease can be determined through early assessment and investigative procedures and appropriate interventions can then be put in place. The underlying pathology needs to be corrected in order for arterial ulcers to heal. This together with appropriate wound care interventions creates an environment conducive to healing. **WE**

Morgan D (1995) Myiasis: the rise and fall of maggot therapy. *J Tissue Viability* **5(2)**: 43-51

Siegreen M (2004) Arterial insufficiency and ulceration diagnosis and treatment options. *Nurse Practitioner* **9(29)**: 46-51

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