



Non – healing ulcers Including those caused by non-tuberculous mycobacteria (NTM)

Many different medical conditions can cause non-healing ulcers. The conditions range from vascular disease and diabetes to foreign bodies, autoimmune diseases, cancer and infections. In the Northern Territory, some non-healing ulcers may result from diseases usually not experienced in the temperate southern zones. Awareness is required to consider and accurately diagnose the cause of the ulcers and provide appropriate treatment. Seeking early medical attention with an ulcer that is not healing is important, particularly for consideration of underlying causes and to take appropriate diagnostic samples or swabs. In addition, ulcers seen at an early stage, in general, can be treated much more easily than larger ulcers.

What diseases cause non-healing ulcers?

Diseases that commonly cause non-healing ulcers are vascular disease, diabetes, skin cancers and some infections. In the tropical climate of the Northern Territory, melioidosis and non-tuberculous mycobacterial (NTM) skin infections can also cause non-healing ulcers as well as leprosy which has not been eliminated from the Indigenous population.

Vascular Disease

The majority of chronic leg ulcers are from venous insufficiency, arterial insufficiency or a combination of both. Older people, particularly if they are, or have been smokers, may have disease of their arteries that reduces the flow of blood particularly to their lower legs and feet. These people often experience cold feet, and sometimes pain in their legs on walking. People with vascular disease with minor abrasions of their lower limbs can develop non-healing ulcers. Their impaired blood supply to the affected area reduces the body's

ability to provide the healing response that normally follows an injury.

Diabetes

Non-healing ulcers commonly occur in people who have diabetes, particularly if their diabetes is poorly controlled and they smoke. Poorly controlled diabetes may result in vascular disease of the arteries that reduces the body's ability to provide the healing response that normally follows an injury. The microvascular disease can result in the loss of sensation particularly to the lower limbs and feet, which results in people not being aware of any cuts or burns to their feet. Diabetes reduces the body's overall ability to heal injuries and to prevent and combat infection. People with poorly controlled diabetes therefore are more prone to injuring their lower limbs, and developing non-healing ulcers.

Skin Cancers

Skin cancers can also present as a non-healing lesion or ulcer and early medical attention in this setting is particularly important. Skin cancers seen and treated at an early stage, normally result in a cure. A delay in seeking treatment may result in the need for more extensive surgery, and the possibility of invasive disease.

Melioidosis

In tropical areas, the bacterial infection melioidosis, in addition to causing potentially fatal pneumonia and septicaemia, can also result in non-healing skin abscesses and ulcers. These occur mainly by direct inoculation from the environment. Early medical attention and specific antibiotic treatment is important to the management of this condition.

Non-tuberculous mycobacteria (NTM)

This group of organisms cause uncommon mycobacterial diseases seen both in temperate and tropical zones. In addition to pulmonary disease, NTM can cause lymphadenitis (swollen glands), wound infections and non-healing skin ulcers.

Exactly how the mycobacterial infections occur has not been well established, but the organisms are found in e.g. soil and water. There is no evidence of person-to-person transmission of these infections. Outbreaks have occurred and have been linked to contaminated e.g. surgical equipment and spas. Some cases cluster in regional geographic areas.

A cluster of cases of NTM skin ulcers affecting children has been noted in the Darwin – Palmerston region. Risk factors associated with acquiring these NTM skin infections are still to be determined.

Clinical Presentation of NTM skin ulcers

NTM skin ulcers typically present with an initial lesion similar to a mosquito bite. This then develops into a non-healing skin lesion or ulcer. In the Northern Territory these lesions to date have mainly been in healthy children residing in the Palmerston-Darwin residential areas. In each case there has been no apparent history of injury, and the lesions have typically been on the upper limbs or torso. Organisms responsible have included *Mycobacteria fortuitum* and *M. ulcerans* (*M. ulcerans* lesions are also known as Buruli or Bairnsdale ulcers).

Management of NTM skin ulcers

NTM skin ulcers are uncommon and do not heal with the use of standard antibiotics. The

identification of an NTM ulcer is confirmed through the presence of acid-fast bacilli on microscopy and culture and/or PCR from a wound swab or biopsy.

The management of NTM skin ulcers requires surgical excision of the ulcer and in some cases the addition of a prolonged course of specific antibiotic treatment. On referral, the management of NTM skin ulcers is undertaken through the Centre for Disease Control, Darwin normally in conjunction with a surgical specialist.

Leprosy

Leprosy is a chronic mycobacterial disease of the skin and peripheral nerves. Leprosy is now uncommon in the Northern Territory, however occasional new cases still occur. The involvement of the peripheral nerves can lead to loss of sensation particularly affecting the hands and lower limbs. As in diabetes, the loss of sensation results in people not being aware of any cuts or burns that they may sustain. For this reason people with leprosy are more prone to developing hand and lower limb injuries, which may develop into non-healing ulcers. Leprosy always needs to be considered in the presentation of a non-healing ulcer, especially in the Indigenous population or those from countries where leprosy has not been yet eliminated, such as Myanmar, Brazil, India, Madagascar, Mozambique, Nepal and Nigeria.

Other infections

Non-healing ulcers can also occur in nocardia and actinomycosis infections, chromoblastomycosis (deep skin infections from various fungi), and from resistant organisms such as methicillin resistant *Staphylococcus aureus*. Non-healing ulcers may also represent an underlying chronic infection such as osteomyelitis or of the presence of a foreign body.

Fact sheets with further information on leprosy and melioidosis can be found on http://www.nt.gov.au/health/cdc/fact_sheets/fact.shtml

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