Diagnostic approach to tropical skin infections

Angela McBride

Stephen L Walker

Abstract

Here, we review the common presentations and pitfalls in diagnosing tropical skin infections. We highlight some of the features in the history and examination that are key to reaching the final diagnosis. We focus on common and important conditions in greater depth, and present diagnostic algorithms for the major presenting syndromes, including ulcers and weeping spots, patches and plaques, papules and nodules.

Keywords Cutaneous larva migrans; cutaneous leishmaniasis; leprosy; MRCP; myiasis; tungiasis

Key points

- The successful diagnosis of tropical skin infections relies on the physician taking a thorough history, including travel destination, specific exposures, timing of onset and evolution of the skin lesion
- Do not forget to take a sexual history and establish HIV status
- Careful physical examination is often diagnostic (e.g. cutaneous larva migrans, tungiasis, myiasis)
- Skin biopsy is essential for the diagnosis of leprosy and cutaneous leishmaniasis, and to rule out malignancy in undiagnosed skin lesions
- If in doubt, seek specialist advice from a tropical diseases physician or dermatologist

Introduction

After fever and diarrhoea, skin conditions are the most common presenting complaints among travellers returning from tropical regions; in a study of >45,000 patients seeking healthcare after tropical travel, 19.5% had a primary dermatological complaint.[1] Although some patients will be diagnosed with a tropical infection, many presentations are caused by non-tropical skin conditions (e.g. eczema, fungal infections, scabies, impetigo) that are more prevalent in, or made worse by, the tropical environment. Many systemic infections (e.g. dengue, Zika, tick typhus, leptospirosis) also have skin manifestations; these are covered separately. Because the range of skin complaints seen in patients returning from the tropics is wide, we focus on a clinical approach to skin lesions in the returning traveller that can help clinicians to narrow the differential diagnosis.

History

It is vital to take a comprehensive history. Specific questions should be asked about the following.

Geographical location/destinations visited

Some skin infections, such as onchocerciasis, loiasis and cutaneous leishmaniasis have a restricted geographical distribution; in these cases, the differential diagnosis of a skin lesion can be narrowed by taking a detailed history of countries and regions visited.[2]

Onset of the skin condition in relation to travel

It is highly unlikely that an insect bite would cause problems more than a few weeks after return from tropical travel. If this is the case, myiasis (cutaneous infection with a fly larva), tungiasis ('jiggers') or cutaneous leishmaniasis should be considered as alternative diagnoses. Scabies and bedbugs present within a few months of return. In contrast, leprosy skin lesions can present decades after migration from an endemic region.

Evolution of the lesion

Some skin lesions are migratory; the itchy serpiginous track of cutaneous larva migrans migrates slowly (1–2 cm/day), whereas the urticarial wheal of larva currens moves more rapidly (1–10 cm/hour). Other infections evolve morphologically over time: cutaneous leishmaniasis initially presents as a papule that enlarges to a nodule with an overlying crust, which, when removed, exposes a painless ulcer. Lesions of 'Old World' cutaneous leishmaniasis can spontaneously heal from the centre outwards over 1–2 years.

Specific exposures/activities

Cutaneous larva migrans and cutaneous leishmaniasis are common in patients returning from tropical beach and jungle destinations, respectively, while larva currens and tungiasis can be seen in patients who have been walking barefoot. Scabies, bedbugs and impetigo all occur more commonly in travellers who have been living in conditions where showers or clean bed linen may not be readily available (e.g. hostels, refugee camps). Myiasis is frequently seen in travellers from Africa who have not ironed their clothes before wearing them. It is important to ask about sexual exposures, because common sexually transmitted infections including HIV (both seroconversion and advanced disease) and syphilis frequently present with skin complaints.

Angela McBride *MRCP DTM&H MPH is Academic Clinical Fellow in Infectious Diseases and Medical Microbiology at University College Hospital, London, UK. Competing interests: none declared.*

Stephen L Walker *PhD MRCP DTM&H is Consultant Dermatologist and Associate Professor at the London School of Hygiene and Tropical Medicine, UK. Competing interests: none declared.*

Please cite this article in press as: McBride A, Walker SL, Diagnostic approach to tropical skin infections, Medicine (2017), https://doi.org/10.1016/j.mpmed.2017.10.008

Examination

Some infestations, including myiasis, tungiasis and cutaneous larva migrans, can be diagnosed on the basis of history and examination alone (see below).

Morphology

Lesions can be classified by their morphological characteristics: ulcers and weeping spots (Figure 1), patches and plaques (Figure 2), and nodules and papules (Figure 3). In some infections, lesions can evolve.

Distribution

Leishmaniasis is frequently found on exposed surfaces, whereas myiasis caused by the African tumbu fly mostly affects clothed regions of the body. Cutaneous larva migrans usually begins on surfaces that have had contact with sand (feet, buttocks, back), and tungiasis between the toes or in the periungual skin. Bedbug and flea bites usually cause grouped lesions. The excoriated burrows and papules of scabies are frequently found in finger and toe web spaces.

Investigations

1. **Full blood count** – eosinophilia (peripheral eosinophil count $>0.45 \times 10^9$/litre) may be present in onchocerciasis, strongyloidiasis and loiasis.
2. **HIV test** – numerous skin complaints are associated with, or worsened by, HIV infection (denoted by an asterisk in Figures 1–3).
3. **Skin swab** – take a swab from weeping lesions for microscopy, culture and sensitivity. The role of Panton–Valentine leucocidin (PVL) in the pathogenesis of recurrent skin infection is debated[3]; testing must be specifically requested and should be considered only if furuncles are multiple or recurrent.
4. **Histological examination of a skin biopsy** – a biopsy taken from the edge of a lesion has the highest diagnostic yield for the diagnosis of cutaneous leishmaniasis.
5. **Microscopy** (specialist centres only):
   - slit-skin smears (SSSs) from the edge of a lesion, ear lobes and eyebrows for acid-fast *Mycobacterium leprae*

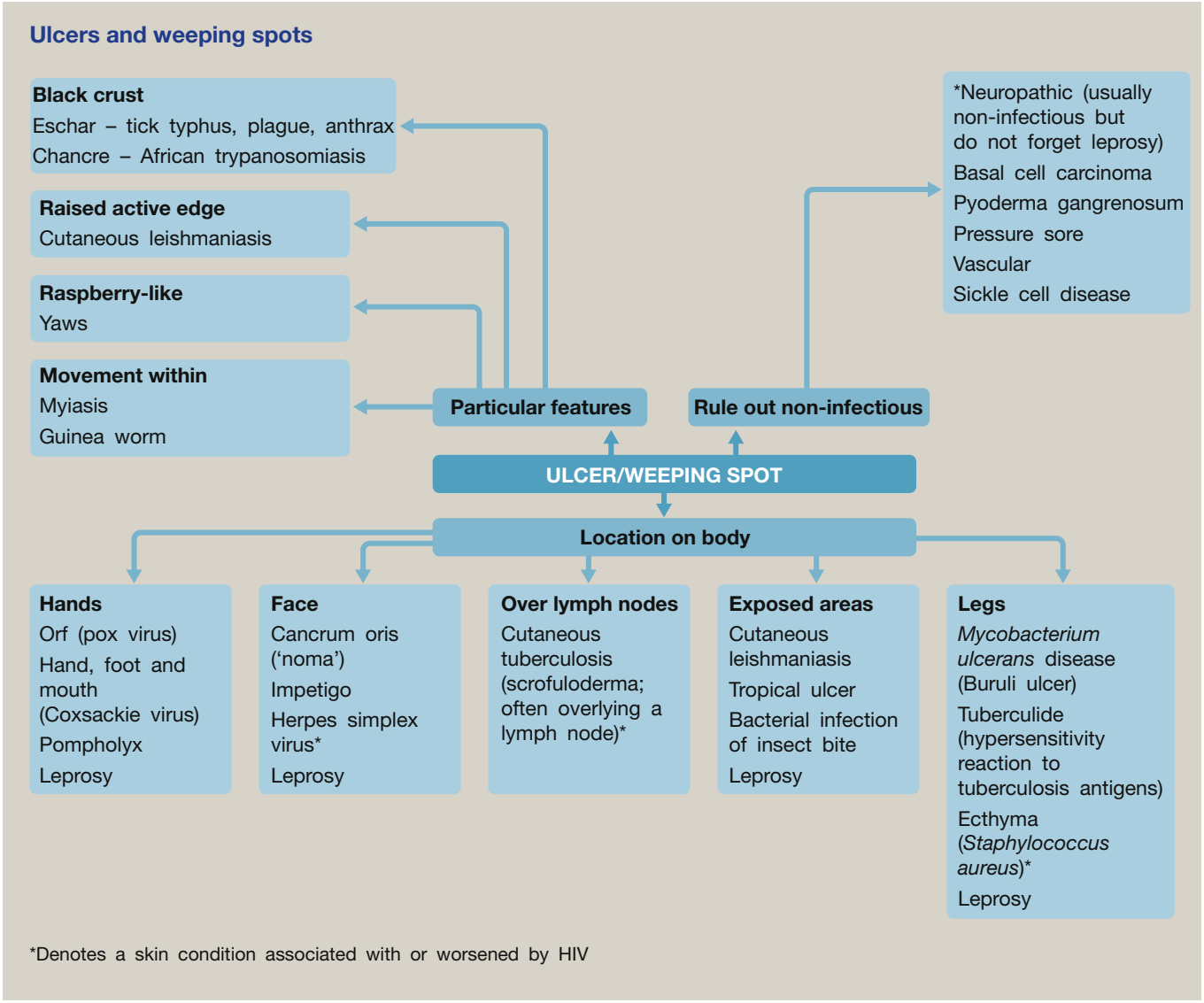

Figure 1

Please cite this article in press as: McBride A, Walker SL, Diagnostic approach to tropical skin infections, Medicine (2017), https://doi.org/10.1016/j.mpmed.2017.10.008