



EDITORIAL

What's New in Travel-Associated Dermatology?

Gentiane Monsel, MD and Eric Caumes, MD

Département des Maladies Infectieuses et Tropicales, Hôpital Pitié-Salpêtrière, Paris, France

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This Editorial refers to the articles by Lachish et al., pp. 232–236, by Diaz, pp. 251–258, by Belaz et al., pp. 263–266, by Ozturk et al., pp. 267–268 and by Tezcan et al., pp. 269–271.

Dermatoses are among the leading causes of medical problems in travelers, something well illustrated in this issue of the *Journal of Travel Medicine* where five articles focus on skin diseases.^{1–5} Dermatoses accounted for 19.5% of travel-related illness in the most recently published GeoSentinel study, where the three leading causes of skin consultations were skin and soft tissue infections (SSTI), insect bites, and cutaneous larva migrans.⁶ Given the importance of dermatological conditions among travelers, we thus highlight here the most recent developments regarding these skin diseases to improve their prevention and post-travel management.

Skin and Soft Tissue Infections

SSTI are the main cause of dermatological consultations in returning travelers often complicating arthropod bites. The clinical spectrum of SSTI is broad but most of them are due to *Streptococcus pyogenes* or *Staphylococcus aureus*. While ecthyma, erysipelas, and cellulitis infections are more likely to be due to *Streptococcus* spp., others such as impetigo, folliculitis, carbuncles, and abscesses are caused by *S. aureus*.⁷ Both methicillin-resistant *S. aureus* (MRSA) and methicillin-sensitive *S. aureus* (MSSA) can carry the Panton-Valentine leukocidin (PVL), a cytotoxin that confers high morbidity by causing leukocyte destruction and tissue necrosis.

S. aureus strains (more likely if PVL positive) acquired abroad may be subsequently transmitted after returning home.⁸ Travel could therefore be the primary

source of PVL-positive staphylococcal infections in the family with the potential to spread into the community. Long-term travelers more often may also present with recurrent *S. aureus* furuncles (Figure 1A). As an example, among 658 Israeli travelers consulting for dermatoses, 21 (3.9%) were suffering from travel-related furuncles.⁹ In this series of 21 long-term travelers (average travel duration of 4 months), furuncles appeared about 3 months after departure and had a prolonged course averaging 8 months. This “post-travel recurrent furunculosis” subsided only after returning home.⁹

Travelers to foreign countries may also be at a risk of acquiring staphylococcal strains with unusual profiles of antibiotic resistance. A recent literature review suggested that international travel played a significant role in the transmission of MRSA, potentially contributing to the replacement of existing endemic MRSA with fitter and more transmissible strains.¹⁰ This trend has many consequences. Culture and drug susceptibility tests should always be employed in any case of potentially infectious skin lesions in travelers to assess a possible infection with multidrug-resistant strains of *S. aureus*. Secondly, when empiric treatment is selected for a presumed staphylococcus-related infection, it should be chosen according to the profile of antibiotic susceptibility at the travel destination, if available.^{11,12} Indeed, it has been shown that choosing antibiotics among empirically recommended treatment would have led to 15% failure.¹²

Hookworm-Related Cutaneous Larva Migrans

Recently, hookworm-related cutaneous larva migrans (HrCLM) has been found to be the most common disease diagnosed in travelers returning from Brazil.¹³

It is noteworthy that the characteristic sign of HrCLM is creeping dermatitis (Figure 1B), a clinical sign that may also be found in other skin diseases, mostly of parasitic origin. In a series of 78 consecutive

Guest-Editor: Charles D. Ericsson

Corresponding Author: Gentiane Monsel, MD, Département des Maladies Infectieuses et Tropicales, Hôpital Pitié-Salpêtrière, 45-83 Bd de l'hôpital, F-75013 Paris, France. E-mail: gentiane.monsel@psl.aphp.fr

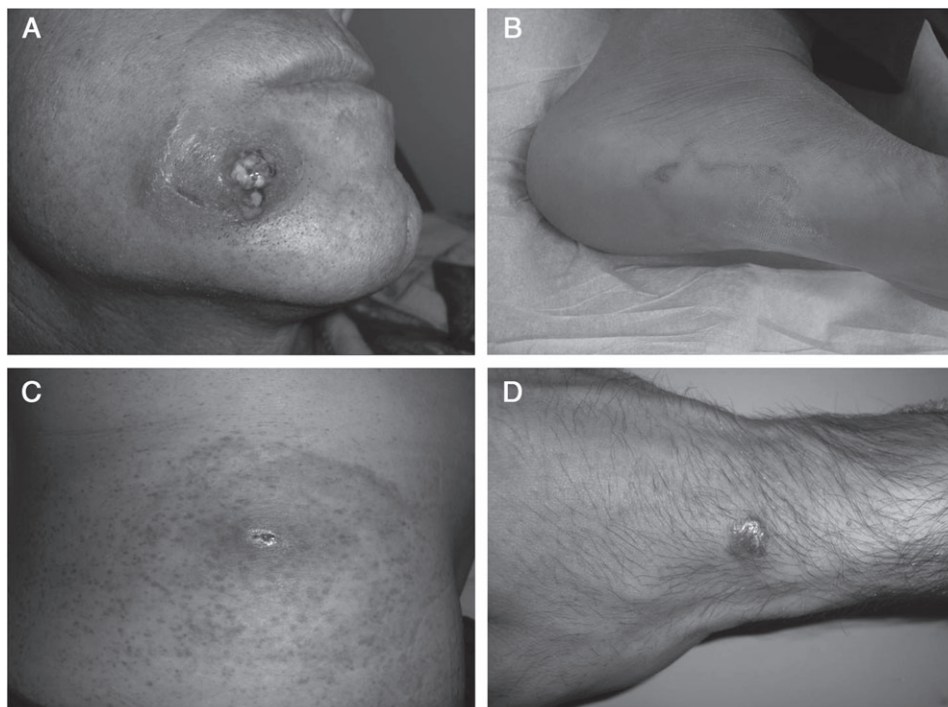


Figure 1 (A) Recurrent *Staphylococcus aureus* furuncles in a 35-year-old patient returning from Malaysia. (B) Hookworm-related cutaneous larva migrans of the right foot in a woman who went to the beach and was returning from Dakar, Senegal. (C) Furuncular myiasis caused by *Cordylobia anthropophaga* complicated by contact dermatitis in a 60-year-old patient returning from Ivory Coast. (D) Cutaneous leishmaniasis presenting with a nodule on the wrist, caused by *Leishmania infantum*, in a patient returning from Spain.

cases of creeping dermatitis, 74 (95%) were linked to HrCLM, 2 (3%) to gnathostomiasis, 1 to loiasis, and 1 to “creeping hair” (cutaneous pili migrans).¹⁴ HrCLM was distinguished from other causes of creeping dermatitis by its mode of acquisition, clinical characteristics, and response to treatment.

HrCLM may also present as folliculitis, a not-so-rare condition that offers a unique opportunity for parasitological diagnosis. In a series of 74 cases of HrCLM, 7 patients (9%) also presented with folliculitis.¹⁴ Of note, skin scraping of hookworm folliculitis lesions was performed in five cases, which revealed living nematode larvae in three cases.¹⁴

Regarding the treatment of HrCLM, it has been recently demonstrated that the efficacy of single-dose ivermectin (200 µg/kg) varies according to clinical presentation, being less effective in patients with hookworm-related folliculitis. Indeed, the response rates were 98% in 56 patients presenting with only creeping dermatitis and 66% in 6 patients presenting with hookworm folliculitis.¹⁵ Therefore, patients with hookworm-related folliculitis should be treated with two doses of ivermectin. When ivermectin is not available, it has been confirmed in two large series that albendazole (400 mg daily) for 3–7 days was effective. The authors found cure rates of 89% among 77 patients treated for 3 days in Togo, Africa,¹⁶ and 100% among 78 patients treated for 7 days in Italy.¹⁷

Tungiasis, Myiasis, and Leishmaniasis

Tungiasis and myiasis are less frequently diagnosed in travelers. However, this issue of the *Journal of Travel Medicine* includes a case series of 90 travelers diagnosed with furuncular myiasis in Israel² and an important outbreak of tungiasis in travelers.³ In the series of myiasis, there were more cases related to *Dermatobia hominis* than *Cordylobia anthropophaga* just because patients were returning more from South America than from Africa (Figure 1C). Nevertheless, this comparative series also helps to differentiate both forms of myiasis in terms of localization, number of lesions, and median duration.² Interestingly, three cases were caused by *Cordylobia rodhaini* acquired in Ghana. This species is less common and has been rarely studied.¹⁸ It has been reported in tropical Africa, especially in areas of rainforest in sub-Saharan Africa. Its life cycle resembles that of *C. anthropophaga*.

Regarding the outbreak of tungiasis, the window of exposure is narrow (2 weeks in Madagascar), and the average time between the return from travel and the onset of symptoms has been estimated at 15 days.³ These kinds of observations are welcome because they will serve to provide better insight into the incubation period of this disease.

Cutaneous leishmaniasis (CL) is another leading tropical disease diagnosed in this setting (Figure 1D).

Diagnosis of CL is currently based on direct examination under light microscopy of a skin scraping of an open lesion or a saline aspirate of the cutaneous lesion stained with Giemsa. Rapid species diagnosis with high sensitivity is made by polymerase chain reaction, which allows immediate species-based treatment.^{19,20} Unfortunately, this technology is not yet widely available. In patients infected with Old World species (*Leishmania major*, *Leishmania tropica*, and *L. infantum*), topical treatment with paromomycin or pentavalent antimonial agents (combined with cryotherapy) given intralesionally is safe and an effective treatment option. Regarding New World species, CL therapeutic options include systemic therapy (with liposomal amphotericin B, pentamidine isethionate, miltefosine, or, to a lesser extent, pentavalent antimonial drugs) or topical treatment (with paromomycin or pentavalent antimonials) according to the culprit species, the localization number, and the size of the lesions.^{19,20}

Sea and Sun

The growing importance of environmental diseases in travel medicine also applies to skin diseases. The review article published in this issue focuses on marine envenomation caused by *Scorpaenidae* species.¹ However, travelers should not forget that jellyfish envenomation carries a much higher risk given their worldwide distribution²¹ and severity, including potential death. Another skin disease related to marine creature exposure is contact dermatitis as reported in this issue after sea anemone exposure.⁴ Physicians taking care of patients with marine envenomation should also be aware about severe infectious complications with marine bacteria, especially *Aeromonas hydrophila*, *Vibrio vulnificus*, *Chromobacterium violaceum*, and *Shewanella* infections.²²

In contrast, sun exposure is uncommonly associated with life-threatening conditions, but its long-term consequences on the skin can be as harmful, something any traveler should be warned about. Indeed, sunburns are one of the most common health problems during travel as again illustrated in this issue.⁵

In conclusion, travelers abroad must be appropriately vaccinated against tetanus before departure and specifically instructed to avoid arthropod bites, animal exposures, and sun overexposure. They should also be informed of the risk of walking barefoot or not using mats at beaches, as well as itching in case of pruritus. As far as skin diseases are concerned, a traveler's medical kit should include insect repellents, sunscreen, emollient, condoms, antiseptics, antibiotics effective against bacterial skin infection, oral antihistamines, and corticosteroid ointment.

Declaration of Interests

Both authors state that they have no conflicts of interest to declare.

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This picture illustrates the importance of avoiding sun exposure in travelers. Autochthonous populations in tropical countries are fully aware of the dangers of sun exposure and protect themselves from it, like this ambulatory merchant who benefits from the umbrella's shadow.

This entire issue is illustrated by pictures taken in Nepal to pay homage to the Nepalese people and the culture of Nepal, after the terrible earthquake on 25th April 2015. Setting: Bhaktapur, Nepal. *Photo Credit: Eric Caumes.*