

Cutaneous Infectious Diseases in the Returning International Traveler

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With the increase in globalization and travel, infectious diseases that were once only found in remote areas are now expanding in geographic range and are emerging more frequently. Globally mobile populations move pathogens across international borders, bringing once exotic diseases closer to home. It is estimated that each year approximately 2 billion individuals move across large geographic distances, with approximately half crossing international borders.¹ In 2006, a *New England Journal of Medicine* article described the spectrum of disease in ill travelers returning from the developing world; dermatologic diseases were the third most common diagnoses after systemic febrile illnesses and acute diarrhea.² The number of dermatologic diseases in returning travelers varies widely depending on the geographic regions visited, with travelers returning from South America and the Caribbean having the highest incidence of skin disease related to travel. Many diseases have geographic preferences and being familiar with common skin diseases from different regions of the world can help narrow the differential diagnosis when the patients present in the dermatologist's office after returning home.

The most common reported skin conditions related to travel to the developing world include the following: insect bite reactions, cutaneous larva migrans, allergic skin reactions, abscesses, superficial mycoses, animal bites, leishmaniasis, swimmer's itch, impetigo, and mite infestations. In addition, dengue and rickettsial infections are among the most common systemic febrile illnesses and both often are associated with cutaneous manifestations. Many of these conditions occur more commonly in a specific geographic distribution and knowing the endemic regions, incubation period, and common presenting signs can substantially improve the likelihood of a correct diagnosis. Many of these diseases

are self-limited; however, some of these imported diseases can be fatal and others have notable associated complications, making timely diagnosis and treatment critical. Dengue and chikungunya virus are 2 emerging systemic febrile illnesses with cutaneous manifestations in travelers.

Dengue

Dengue is the most rapidly spreading mosquito-borne viral disease in the world. In the last 50 years, incidence has increased 30-fold with increasing geographic expansion to new countries and recently from urban to rural settings.³ Dengue occurs throughout the tropical regions of Asia, Central and South America, Africa, and the Mediterranean. Countries with epidemics in the Asian region within the last decade include Indonesia, Myanmar, Sri Lanka, Thailand, Bangladesh, India, Bhutan, Nepal, and several Pacific Island countries.³ Dengue can be found throughout Central America, the Caribbean, and South American countries, with the highest incidence in countries with a tropical climate. The incidence is increasing in many African countries, including those in tropical western and central Africa. Dengue fever is caused by 1 of 4 strains and is transmitted by a day-biting *Aedes* mosquito often found in urban areas with tropical climates. The disease is characterized by the abrupt onset of high fever; frontal or retro-orbital headache; myalgia; minor bleeding; and a faint macular erythematous flushing rash, so-called white islands in a sea of red,⁴ that becomes evident on the second to fourth day of illness. The incubation period is short, ranging from 4 to 10 days. Because plasma leakage, hypotension, and hemoconcentration are complications of severe dengue, an accurate timely diagnosis is critical. Confirmation of diagnosis is obtained with serologic tests and treatment is supportive, sometimes taking place in an intensive care unit setting depending on the degree of severity.

Chikungunya Virus

Chikungunya virus is a disease that also is transmitted by a day-biting *Aedes* mosquito, which causes a systemic febrile illness associated with cutaneous

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The author reports no conflict of interest.

findings. Chikungunya virus has a similar geographic distribution as dengue fever and recently caused major outbreaks in South-East Africa and Southern Asia.⁵ Chikungunya virus also is clinically similar to dengue, with features including abrupt onset of high fever, a short incubation period (3–7 days), and a blanchable erythematous rash with islands or sparing, making distinction somewhat difficult. The major distinguishing feature is that polyarthritides is common with chikungunya virus and may persist for months with potential for disability. Chikungunya virus uncommonly presents with complications but some may include encephalitis, seizures, heart failure, unstable blood pressure, acute renal failure, antepartum fetal death, disseminated intravascular coagulation, respiratory failure, and hepatitis.⁶ In older patients, particularly those with underlying medical conditions, there is an increased risk for these complications, including death.⁵ Diagnosis can be made with viral culture, polymerase chain reaction, or serology.⁵ Treatment is supportive, targets symptomatic relief, and may include nonsteroidal anti-inflammatory drugs or steroids.

Conclusion

Globalization and travel are making infectious diseases that were once only found in remote areas emerge more frequently in the developed world. Travel history is critical in diagnosing these diseases and should always be obtained in a patient with a new-onset rash. When a patient presents with clinical findings suspicious for a disease acquired in a tropical region, a detailed travel history is

important and should include the following: exact time of travel, countries traveled, other risk factors for acquiring disease (eg, eating raw foods, swimming in rivers/lakes, sexual contact, contact with wild animals, living in unclean conditions), exact time of onset of symptoms, and any medications taken to alleviate symptoms. Diagnostic tests often are available in tertiary medical care centers or in referral laboratories in developing countries and should be used to make a timely diagnosis. Treatment or supportive care should be initiated as soon as possible, especially for systemic febrile illnesses, to avoid complications.

REFERENCES

1. MacPherson DW, Gushulak BD, Baine WB, et al. Population mobility, globalization, and antimicrobial drug resistance. *Emerg Infect Dis.* 2009;15:1727-1732.
2. Freedman DO, Weld LH, Kozarsky PE, et al; GeoSentinel Surveillance Network. Spectrum of disease and relation to place of exposure among ill returned travelers. *N Engl J Med.* 2006;354:119-130.
3. World Health Organization, and the Special Programme for Research and Training in Tropical Diseases. *Dengue: Guidelines for Diagnosis, Treatment, Prevention and Control.* Geneva, Switzerland: World Health Organization; 2009.
4. Waterman SH, Gubler DJ. Dengue fever. *Clin Dermatol.* 1989;7:117-122.
5. Thiboutot MM, Kannan S, Kawalekar OU, et al. Chikungunya: a potentially emerging epidemic? *PLoS Negl Trop Dis.* 2010;4:e623.
6. Chen LH, Wilson ME. Dengue and chikungunya infections in travelers. *Curr Opin Infect Dis.* 2010;23:438-444.