Viral Hemorrhagic Fevers

Traveler Summary

This article discusses Lassa fever, Marburg virus disease, and Crimean-Congo hemorrhagic fever.

For information on Ebola, see *Ebola Virus Disease*.

Key Points

- Viral hemorrhagic fevers (VHFs) describe a wide range of viral infections common in parts of Africa, Europe, and Asia, transmitted through direct contact with body secretions from infected animals or persons, handling or consumption of infected animals, contact with contaminated surfaces, inhalation of infected aerosolized droplets, or through the bite of infected ticks.
- Risk is generally low for travelers going to affected areas, but increased for long-term and adventure travelers with extensive outdoor exposure or contact with infected persons or livestock.
- Symptoms are variable and include fever, headache, extreme weakness, and abdominal pain.
- Consequences of infection may include bleeding, deafness, and death.
- Prevention includes avoiding areas with rodent infestation, caves or mines where bats congregate, contact with livestock or slaughterhouses within affected areas, and observing personal protective measures against tick bites.
- No vaccine is currently available. Ribavarin (antiviral) may be effective against some viral hemorrhagic fevers.

Introduction

The term "hemorrhagic fever" is often used to group together viral infections worldwide that have little in common except that they are rare, severe, have a high death rate, and in some cases, may be hemorrhagic. This group includes Lassa fever (LF), Marburg virus disease (MVD), and Crimean-Congo hemorrhagic fever (CCHF). Yellow fever and dengue may also be complicated by hemorrhage; see *Yellow Fever* and *Dengue*.

Lassa virus is transmitted by African multimammate rats; African fruit bats transmit Marburg virus; and ticks transmit the virus responsible for CCHF. Humans may be infected with these hemorrhagic fevers through direct contact, inhalation, ingestion, tick bites, or via contaminated medical equipment.

Risk Areas

Lassa Fever

Infection is prevalent in West, Central, and East Africa, especially Guinea, Sierra Leone, Liberia, and parts of Nigeria. Infections tend to occur mostly in rural villages; however, urban cases have begun to emerge. LF infections may occur any time of the year, but incidence increases during the dry season between January and May.

Marburg Virus Disease

Although rare, MVD outbreaks have occurred in Angola, Democratic Republic of the Congo, and Uganda. Confirmed cases have also been reported in Kenya, South Africa, and Zimbabwe.

Crimean-Congo Hemorrhagic Fever

CCHF occurs in the eastern and southern parts of Europe, central and southern Asia, the Middle East, and in Africa (especially coastal countries of West and sub-Saharan Africa).

Transmission

Lassa Fever

Lassa virus is predominantly transmitted to humans though direct contact with urine, feces, or saliva deposited by infected rats on surfaces, by inhalation of infected aerosolized dust, via ingestion of contaminated food or water, or via consumption of

rodent meat as part of the normal diet. Human-to-human transmission may occur in hospital or rural settings through contact with infected blood or secretions from infected persons, through contaminated needles or other medical equipment, or via inhalation of contaminated aerosolized respiratory secretions. Cuts and scratches on the skin are probably the most important portal of entry. Sexual transmission has also been reported.

Marburg Virus Disease

Marburg virus is transmitted to humans via direct contact with infected bat feces or bodily fluids, inhalation of aerosolized secretions, or handling of bats and other infected animals. Human-to-human transmission may occur through direct contact with blood, secretions, or other bodily fluids from infected persons, including from contaminated equipment or needle-sticks in health care settings. Sexual transmission may also occur.

Crimean-Congo Hemorrhagic Fever

Humans become infected via the bite of infected ticks or handling of infected livestock, including animal tissues or blood. Transmission may occur in health care settings through contact with infected blood and fomites or inhalation of aerosols generated through medical procedures.

Risk Factors

Lassa Fever

Risk is rare among travelers and expatriates who reside in endemic areas; however, risk is proportional to the degree of contact with rodents (including their excreta, which may contaminate stored grain and other food).

Marburg Virus Disease

Risk is extremely low for travelers, unless the person has direct physical contact with a sick or infected dead person, animal, or their blood or bodily fluids. Persons visiting mines or caves inhabited by African fruit bats are also at increased risk.

Crimean-Congo Hemorrhagic Fever

Risk is generally low for travelers going to affected areas who engage in outdoor activities (such as camping) and are bitten by ticks; there have been very few reports of CCHF in travelers. However, persons in affected areas who are in contact with livestock (e.g., farmers, slaughterhouse workers, veterinarians, animal workers), who engage in ritual slaughter of infected animals in religious ceremonies, or persons who consume undercooked goat meat are at increased risk. Persons with direct physical contact with a sick or infected dead person, animal, or their blood or bodily fluids may also be at increased risk.

Symptoms

Lassa Fever

Symptoms most commonly develop about 7 to 18 days following exposure and include fever, general discomfort, headache, muscle aches, dry cough, chest and abdominal pain, and sore throat. The tonsils may secrete fluids, which can progress to fluid accumulation in the facial and neck region, resulting in difficulty breathing.

Marburg Virus Disease

Symptoms usually appear abruptly about 3 to 10 days following exposure and include high fever, headache, muscle aches, abdominal pain, diarrhea, vomiting, and general discomfort. Although the throat is sore and swollen, it does not secrete fluids as with Lassa fever.

Crimean-Congo Hemorrhagic Fever

Symptoms usually develops about 3 to 7 days after exposure and include sudden onset of high fever, headache, muscle ache, nausea, abdominal pain, and dizziness.

Consequences of Infection

Lassa Fever

Bleeding, deafness, hypotension, and shock may occur. Death occurs in about 1% of symptomatic cases.

Marburg Virus Disease

Bleeding, shock, and chronic personality changes may occur. Death occurs in about 24% to 88% of symptomatic cases.

Crimean-Congo Hemorrhagic Fever

Hemorrhage, bruising, and internal bleeding may occur. Death occurs in about 5% to 30% of symptomatic cases.

Need for Medical Assistance

Travelers who develop symptoms of VHF, especially in the setting of a risk exposure noted above, should seek urgent medical attention. For LF, the antiviral ribavirin, if given within the first few days from the onset of illness, may significantly reduce the risk of death. Ribavirin has also been shown to reduce severity of symptoms after CCHF infection. Antiviral agents are generally ineffective against MVD; treatment is limited to general supportive therapy.

Prevention

No vaccine or drugs are available to prevent these diseases, so it is important that travelers avoid situations that put them at risk.

Lassa Fever

Avoid contact with rodents (including their excreta, which may contaminate stored grain and other food) and staying or eating in accommodations with known or suspected rodent infestations when traveling or living in risk areas. Store food in rodent-proof containers and keep the home clean to discourage rodents from entering the home.

Marburg Virus Disease

Avoid entering caves, contact with bats and nonhuman primates, and direct contact with corpses or blood/bodily fluids of acutely ill persons.

Crimean-Congo Hemorrhagic Fever

Wear long, light-colored trousers tucked into boots when hiking and observe personal protective measures against tick bites. See *Insect Precautions*. Avoid physical contact with infected livestock and animal tissues or blood.