



FIGURE 152e-1 Syndromic approach to the differential diagnosis of suspected infection in a veteran who has returned from a foreign war in southwest Asia, central Asia, or Africa at least 2 weeks prior to clinical presentation. HBV, hepatitis B virus.

malaria acquired during the U.S.S.R.'s war in Afghanistan in the 1980s, 76% developed clinical manifestations >1 month after their return to the U.S.S.R., with some cases developing as long as 3 years later.

Imported malaria with prolonged clinical latency periods remains a problem among veterans returning from wars in endemic areas. In a cluster of 112 cases of imported disease in U.S. Marines returning to the United States from deployment to Somalia in 1993, falciparum malaria was diagnosed as late as 12 weeks after return; some cases due to *P. vivax* were diagnosed after an additional 2 months. In an outbreak of imported *P. vivax* malaria among U.S. Army Rangers deployed to Afghanistan in 2002, the median time to diagnosis was nearly 8 months after return.

Although malaria is largely preventable through the combined use of vector control, personal protective measures (e.g., bed nets, insect repellent, long sleeves, permethrin-treated clothing), and chemoprophylaxis, nonadherence to these measures and/or to chemotherapy (including terminal primaquine prophylaxis to eradicate the liver stage of *P. vivax*) appears to be responsible for the majority of cases in recent U.S. military experiences. However, there is also evidence to support chemoprophylaxis failures in a small subgroup of cases of *P. falciparum* and *P. vivax* malaria acquired during U.S. deployments to Somalia. Thus, imported malaria in returning war veterans remains possible despite appropriate adherence to chemoprophylaxis.

Viral Hepatitis (See Chap. 360) The incidence of viral hepatitis, once a major scourge of military campaigns and their aftermath, has declined considerably over the past half-century of military engagements. Although more than 115,000 cases of viral hepatitis, most due to hepatitis A virus, were reported among Soviet troops serving in Afghanistan in the 1980s, only rare reports of hepatitis A and B were noted during the massive, short-term deployment of U.S. troops to the Persian Gulf in the early 1990s. Hepatitis A and E, endemic in many parts of the developing world, present clinically as acute infections transmitted by the fecal-oral route and can be largely controlled with interventions

practiced widely among military forces from industrialized countries: appropriate food and water hygiene and pre-deployment vaccination against hepatitis A. Hepatitis B contamination of serum-stabilized yellow fever vaccine caused a large outbreak of the disease among U.S. forces during World War II; such events are currently unlikely, given the use of modern virus-inactivation techniques in vaccine manufacturing. Despite their potential—as a consequence of their long clinical incubation and latency periods—to cause disease in returning veterans, hepatitis B and hepatitis C have been acquired relatively rarely in theater because of risk factor mitigation: routine drug testing of modern armies and screening of the blood supply to exclude viral contamination.

Rabies (See Chap. 232) Deployed soldiers are often in close contact with feral dogs and other potentially rabid animals in both urban and remote combat environments. In the period 2001–2010, 643 animal bites were documented during medical encounters among U.S. forces in the combat theaters of southwest and central Asia; the majority of these potential exposures were dog bites. Of bitten personnel, 18% received rabies postexposure prophylaxis. Recently, a U.S. soldier developed rapidly progressive signs and symptoms of rabies 8 months after a dog bite in Afghanistan and died within 17 days of illness onset. This case, which represents the first rabies death in nearly 40 years in a member of the U.S. military who acquired the infection overseas, reinforces both the lethality of the disease and the need to practice vigilant exposure precautions among deployed military personnel and to administer postexposure prophylaxis to troops who are bitten by animals in high-risk areas.

CHRONIC OR RELAPSING INFECTIOUS DISEASES ACQUIRED IN THE THEATER OF WAR

Leishmaniasis (See Chap. 251) Various forms of leishmaniasis may be acquired during military deployment and may present with myriad chronic clinical manifestations in war veterans. Because the protozoal