Refugees, Mass Casualties, and Hepatitis B Transmission

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(See the article by Italiano et al, on pages 400–7.)

The report by Italiano et al in this issue of the *Journal* presents a convincing case for hepatitis B virus (HBV) transmission among Afghan refugees injured in a ship explosion en route to resettlement in Australia. The acute cases of HBV infection were well documented serologically; the pattern of incubation periods suggested a point source exposure; and the molecular epidemiology demonstrated a high degree of viral relatedness, implicating a common transmission source. However, exactly when and how these men became infected remain intriguing questions.

A blood-borne pathogen, HBV is extremely infectious and can survive in the environment for up to 7 days. It is highly transmissible in settings where exposure to contaminated blood or other body fluids is possible, such as health care and residential care facilities [1]. Although risk is primarily associated with needle-stick injuries, transmission has been documented in these settings in the absence of this particular exposure [1]. For these reasons, HBV transmission could have occurred in the immediate aftermath of the explosion.

The Afghan refugees had extensive burns, resulting in large areas of denuded skin with serous fluid loss. Victims were placed near one another reportedly during triage and presumably during transport to medical facilities. One of the victims later tested positive for HBsAg and HBsAg, indicating high infectiousness. Given the expected chaos following the explosion, data are sparse concerning the attention given to infection-control practices during rescue, triage, and transport. As a result, the extent of contact between the HBsAg victim and the other refugees who subsequently developed acute HBV infection is unknown. Similarities in viral strains among victims, some of whom were separated soon after the incident and transported to different medical facilities, support the contention that HBV transmission occurred as a consequence of the explosion.

Though transmission of HBV during the immediate postcasualty period is a very real possibility in the event described by Italiano et al, the authors were unable to provide data to fully assess the potential for other modes of HBV transmission, including exposures in Afghan refugee camps in Indonesia prior to the trip to Australia and during transport prior to the explosion. The period associated with HBV incubation and the molecular epidemiology of these HBV infections support the possibility that these refugees may have been infected before the explosion. HBV is prevalent among refugees from Afghanistan (6%–9%), a population with multiple risks for HBV infection [2, 3], including injection-drug use [3]. These refugees also could have been exposed through improperly sterilized equipment (eg, needles) while receiving health care in Afghanistan—globally, unsafe injection is the putative cause for an estimated 8–16 million HBV infections annually [4].

HBV transmission also could have occurred among the refugees after their arrival in Australia. Assuming U.S. data represent HBV transmission patterns in Australia, it is unlikely that the injured refugees were infected during hospitalization—cases of HBV transmission attributed to hospitals have become uncommon [5]. However, HBV could have been transmitted after injured asylum seekers were discharged from the hospital to a detention facility. The likelihood of this scenario cannot be determined, however, because data-collection efforts in the detention facility were not standardized.

The acknowledgment of other possible routes of HBV transmission should not distract from the authors’ central message. Victims of mass casualty events with risks for HBV transmission should receive hepatitis B vaccine immediately on receipt of postevent medical care. The circumstances of this mass casualty incident strongly suggest, as the authors conclude, that risks of exposures to HBV infection were evident, and that HBV transmission should have been considered in the management of the injured refugees immediately following the explosion. Although data linking HBV exposures to mass casualty events are sparse, CDC and

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other health authorities have issued recommendations to address the risk for infection with blood-borne pathogens for such events, modeled after postexposure prophylaxis for other public health settings [1, 6–8]. In mass casualty settings, CDC recommends the liberal administration of hepatitis B vaccination to persons who are injured and to those who have rendered aid. Specifically, persons with penetrating injuries or exposures of nonintact skin or mucous membranes to potentially infectious tissues or fluids are recommended to receive hepatitis B vaccination within 24 hours and no later than 7 days after injury. CDC also recommends interventions to prevent hepatitis C virus (HCV) infection and HIV infection in mass casualty settings; because HBV, HCV, and HIV are blood-borne pathogens that can be transmitted in these circumstances [1].

This report serves as a reminder of the pervasive nature of HBV as a global pathogen and the role of global migration in the evolution of hepatitis B epidemiology. Approximately 350–370 million persons are living with HBV infection around the world [9], all of whom are at increased risk for liver disease and liver cancer; HBV infection accounts for 30% of liver cirrhosis and 53% of hepatocellular carcinoma worldwide. Fortunately, the addition of hepatitis B vaccination to infant immunization schedules in most countries has progressively increased hepatitis B vaccination coverage globally; an estimated 70% of infants born in 2009 were vaccinated against hepatitis B [9]. Although widespread hepatitis B immunization of infants will prevent many new cases of hepatitis B in upcoming generations, HBV prevalence remains high among the hundreds of millions of people living in endemic countries who did not benefit from this childhood vaccination protocol.

Global migration brings persons from HBV-endemic countries into the health care systems of countries with lower HBV prevalence, where hepatitis B might not be anticipated by providers or considered as part of routine care. In the United States, HBV is a common infection among foreign-born persons [10]. Therefore, CDC recommends HBsAg testing for all persons born in regions with HBsAg prevalence of ≥2% (eg, much of eastern Europe, Asia, Africa, the Middle East, and the Pacific Islands), referral of those found to be infected to care, and referral of close contacts for testing and vaccination.

This report underscores the importance of recognizing that mass casualty events can serve as a setting for HBV transmission. Although the exact mechanism of HBV transmission associated with this explosion remains unknown, when caring for victims of these events (particularly those involving persons born in endemic countries), providers should recognize the importance of administering hepatitis B vaccine as a safe and effective postexposure intervention to prevent HBV transmission. Regardless of when or how any blood-borne infection is transmitted during a mass casualty incident, appropriate, timely prophylactic measures can prevent infection and save lives.

References