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Guidelines to Authors
West Nile Virus in the Blood Donors in UAE

Dear editor,

West Nile virus (WNV) belongs to the family Flaviviridae, a large family of positive-strand RNA viruses with 3 main genera (flavivirus, hepacivirus and pestivirus). Among the more than 70 viruses in the genus flavivirus, several neurotropic and hepatotropic viruses that are important in human disease are transmitted by arthropods (dengue, Japanese encephalitis, yellow fever and tick-borne encephalitis). West Nile virus belongs to the Japanese encephalitis serocomplex, which also includes Japanese encephalitis and St Louis encephalitis, among others.[1]

WNV was associated with West Nile fever, a non-specific febrile illness that was found in several countries in Africa and the Middle East, either in epidemics or as an endemic mild febrile illness. The association with high rates of encephalitis and death is relatively new and suggests the presence of a new strain of virus.[1]

Birds are the main reservoir of WNV in nature; more than 200 species in the United States have been found to be infected. Several species of mosquitoes can acquire the virus after biting a bird with high-level viraemia and may then transmit it to the next animal they bite. Transmission between birds in the absence of mosquitoes has been documented in the laboratory, but whether this occurs under natural conditions remains unknown.[2] Many species of vertebrates can be infected by virus-carrying mosquitoes. Horses have a high mortality rate (30%); in contrast, cats and dogs are infected frequently, but the case-fatality rate is low. Humans typically do not develop high-level viraemia, so they are considered to be a dead-end for the virus under normal circumstances. However, transmission through organ transplantation or blood transfusion has been documented. One case of transmission through breast-feeding was reported, but the infant remained asymptomatic.[3]

The proportion of patients who develop disease after acquiring the virus is unknown. The commonly reported estimates (1 in 5 infected patients develops fever and 1 in 150 infected patients develops severe neurological disease) come from serological surveillance data from the New York epidemic.

Although the transmission of WNV virus by blood transfusion had not been reported before 2002, the findings of transient viraemia after infection and a high proportion of asymptomatic or mildly symptomatic infections suggested that this route of transmission might be possible.[4]

In August 2002, in response to theoretical concern that WNV could be transmitted through blood transfusions, the Food and Drug Administration and the CDC advised blood establishments and health departments to be alert for persons with WNV infection who had donated blood the week before their illness began and for persons with unexplained fever-associated meningitis or encephalitis that developed after the receipt of a blood transfusion. In response to these messages, on 30 August 2002, a state health department notified the CDC of the first suspected case of transfusion-transmitted WNV in a woman who had received blood and blood products related to an obstetrical procedure. Additional reports of WNV infection among transfusion recipients quickly followed.

The geographical distribution of the viruses varies with the presence and density of the appropriate vector. A study was done in Jordan for seroprevalence of WNV, 8% of the study subject was found to have a previous WNV infection. In another study conducted in Egypt, the seroprevalence for WNV was 3% among schoolchildren.

In UAE, there have been no previous studies of WNV infections and no clinical reports of the existence of such infections. For this reason, we conducted this study as a pilot study to guide the health policy makers in this area of the world to develop their blood banks screening policy, in spite of the country policy of not importing any blood from abroad.

A total of 500 healthy blood donors who attended the Zayed military hospital from 20 January to 20 January 2005, were included in the study. A 10-mL venous blood sample, obtained from each participant, serum was separated within three hours of collection and stored at –80 °C until further processing.

Nucleic acid extraction was done using the High Pure Viral Nucleic Acid Kit from Roche-Germany (Cat. No. 11 858 874 001) according to the manufacturer’s procedure. Purified nucleic acid was eluted in 50 µL elution buffer and stored at –80 °C.

A previously published real-time PCR assay was used.[5] The LightCycler instrument from Roche (Germany) was used. A cloned synthetic DNA was used as a positive control for WNV (manufactured by TIB MOLBIOL-Germany). All the positive controls gave positive RT-PCR reactions. None of our samples gave any positive RT-PCR reaction.

Our study is the first documentation that West Nile viral infection is not present in the UAE. Humans become infected with West Nile viruses by the bite of an infected Culex mosquito which is not found in the region. Birds are the reservoirs of infection. The absence of the disease in the UAE is not unexpected.

This study is only meant to be a pilot study to act as guidance for further studies. Our methodology used here can
only detect an acute stage of infection; however, previously infected people cannot be detected by this method and we need to do serological studies.

With the unprecedented increased population mobility in the form of tourism and business, political borders are no longer barriers against the spread of infections. For this, we need to have more studies among our blood donors, which include serology and molecular screening for this virus.

At the local level, the data should give primary picture for the blood bankers in the area. The absence of the WNV infection among the studied population does not mean it is absent in the UAE. Further studies in different geographical areas of the UAE and with different methodologies are recommended.

References


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Received: 28-03-07
Accepted: 02-05-07

Estimation of Antibodies To HBsAg in Vaccinated Health Care Workers

Dear editor,

Hepatitis B infection is a universal health problem. Around 300-400 million carriers are estimated worldwide. Fortunately, there are effective vaccines against the virus, which are about 95% effective.[1] Although the protective efficacy of the primary course of vaccine is well established, there has been no unified opinion for booster doses to sustain protection. The seroconversion rate is influenced by a number of factors, the most important of which are the age and sex of the vaccinee. Because the virus challenge, the dosage and the infectivity of sources can vary considerably, it is difficult to define a minimum protective level of anti-HBs, but the level should be greater than 100 IU/L.[2] Although 10 mIU/mL is generally taken to be protective, some countries, like the UK, adopt a higher reference level of ≥100 mIU/mL.[3]

The present study was undertaken at Jubilee Mission Medical College and Research Institute, Thrissur, Kerala. The purpose of the study was to estimate antibody titers to HBsAg in health care workers who were vaccinated (with the protocol of three doses, (0-1-6) schedule and defaulted after one or two doses). The duration of the response to vaccine is variable, and dependant on the titer of anti-HBs after completion of the course. If vaccine is given for occupational protection and anti-HBs level is low (<100 IU/L), a booster dose should be recommended. Low or non-responders need to be identified and informed that they are not protected and advised to seek prophylaxis on accidental exposure.[2]

A total of 65 health care workers of both sexes (23 males and 42 females) in age group from 20-60 years were tested. Among them, 57 (88%) have completed three dose schedules of primary vaccination. Two (3%) had only one dose, and six (9%) had two doses. All the serum samples were tested for estimation of anti-HBs titers by Roche Elecsys with protocols of electrochemiluminescence. Antibodies to HBs (IgG) were estimated in ranges of 2-1000 mIU/mL of the master curve. Estimated Levels of Anti-HBs in health care workers is given in the Table.

The test results indicate that six (10.5%) of all successfully vaccinated persons have not attained minimal protective levels of antibody, 10 mIU/mL, and six (10.5%) have antibody levels in the range of >11-100 mIU/mL and the rest 45 (79%) have antibody levels >101 mIU/mL. Among the six defaulters who received only two doses, five persons (85%) have attained >101 mIU/mL. This limited study proves that the first two doses usually suffice to initiate anti-HBs production and prepare the immune system for a secondary response to antigen. The third dose stimulates the secondary response and biologically acts as a booster.[1]

The other participants who received two doses have attained...