

## Seoul Hantavirus Infection Mimicking Dengue Fever

B B Hamidon, MMed, S Saadiah, MMed

Jabatan Perubatan Fakulti Perubatan UKM, Jalan Yaacob Latiff, Bandar Tun Razak, 56000 Cheras Kuala Lumpur

Sir,

Hantavirus infections have been reported in many Asian countries namely China, Korea, Taiwan and some parts of Southeast Asia. Given the fact that these countries are currently in close contact with Malaysia, it appears to be reasonable to predict that hantaviruses may also prevail in Malaysia. The infection might have occurred but not diagnosed. Furthermore, the presence of the vector for Seoul type virus, *Rattus rattus* or domestic rats are rampant in this country. The Seoul type virus can mimic dengue fever and thus the diagnosis should be considered especially in seronegative clinical dengue fever.

A 14-year-old Malay schoolboy was admitted for 5-day history of fever, associated with myalgia, arthralgia and headache. He also complained of generalised pruritic rash especially on both limbs for the past 2 days. He denied history of bruises, epistaxis or gum bleeding. Examinations showed that the patient was febrile at 38°C. He looked flushed and a positive Hess test with palatal petechiae and petechial rash over the upper and lower limbs were observed. Examinations of the abdomen, heart, lungs and neurological system were essentially normal. Investigations showed a hemoglobin of 15.7%, white cell count  $4.5 \times 10^9/l$ , platelet  $48 \times 10^9/l$ , and haematocrit 45.7%. His renal and liver function tests were normal. Urine microscopy showed mild albuminuria. Dengue serology was negative both for IgM and IgG.

Serology for hantavirus was positive (1:300). Two blood samples (on admission and at 4 weeks) were sent for further analysis in the Institute of Viral Disease, University of Korea. Plaque reduction neutralisation test (PRNT) confirmed the presence of the antibody to Seoul virus on both occasions with a 4-fold increase in the second specimen. The plaque reduction neutralisation test (PRNT) is considered to be the gold

standard serological test and, it is type specific. It can be used to discriminate between infections caused by different hantaviruses<sup>1</sup>.

The major clinical type of Seoul virus infection is haemorrhagic manifestations and renal involvement. This ranges from mild albuminuria to oliguric renal failure. Seoul virus infections are associated with the presence of hepatitis in a significant proportion of patients. Most patients are febrile and suffered from headache, myalgia and back pain. Petechiae and positive Hess' test is also a feature of Seoul virus infection. Bleeding problems like sub-conjunctival hemorrhage, easy bruising, epistaxis and internal bleeding are also seen. This correlates well with the fact that the central physiologic derangement of Seoul virus infection is vascular dysfunction<sup>2</sup>.

The patient in this case report presented with a classical dengue haemorrhagic fever (Grade 1) with the typical viral symptoms, petechial rash and a positive Hess' test. The presence of mild albuminuria is also quite common in dengue fever. However, as discussed earlier, these signs and symptoms may also appear in the Seoul virus infection. Therefore, to ascertain the offending virus is almost impossible without serological diagnosis. Determination of the serologic type of hantaviruses is possible by the haemagglutination inhibition test or the PRNT. PRNT is the gold standard method of serologic determination of the offending hantaviruses<sup>3</sup>.

In Malaysia the number of domestic rats (the reservoir for hantavirus) are plenty. Given the fact that the countries which had reported many cases of Seoul hantavirus are in close contact with Malaysia, it is reasonable to predict that this infection may also be present in our country. With the emergence of many seronegative cases of dengue fever, samples of these patients were sent for hantavirus serology and to date, this case is the first to have a positive result on Seoul hantavirus.

This case clearly proves that Seoul hantavirus infection is present in our country. In Malaysia, a lot of hemorrhagic fevers are seen from the mild to severe types of infections. Most of them would be labeled as dengue hemorrhagic fever or clinical dengue fever despite a seronegative result. The case presented is a classical case of clinical dengue haemorrhagic fever but the positive PRNT result which identifies the virus proved otherwise. This has a major impact on future assessment and management of viral hemorrhagic fevers. Tests for the identification of the virus should also be made available as in time to come major epidemics might happened; not only the mild but also the severe type of infections which is even more catastrophic.

In conclusion, Seoul type virus infection may well mimic dengue fever that is seen frequently in this country. Therefore, it is worthwhile to look for hantavirus infection in seronegative dengue cases.

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