

WEST NILE VIRUS INFECTIONS IN HUNGARY, AUGUST–SEPTEMBER 2008

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Between 2003 and 2007, a yearly average of six cases of West Nile virus neuroinvasive infection were diagnosed in Hungary. In 2008, 14 cases have been confirmed by the end of October. In contrast with previous years the infection has now appeared also in the north-western part of the country which is endemic for tick-borne encephalitis.

Case descriptions

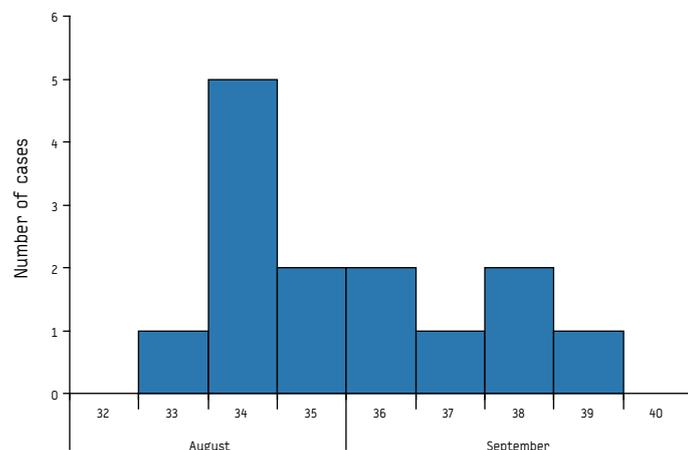
On 19 September the Hungarian reference laboratory for viral zoonoses reported the first two cases of West Nile virus (WNV) neuroinvasive infection in Hungary in 2008. As of 31 October a total of 14 confirmed cases were identified in accordance with the European Union case definitions [1]. In all 14 confirmed cases fever was accompanied by neurological symptoms. The clinical diagnosis for these cases included: serous meningitis (8 cases), encephalitis (4), meningoencephalitis (1), tick-borne encephalitis (1). All patients, except one, were hospitalised and all recovered.

Eight cases occurred in August, six in September. The earliest date of onset of symptoms of the first case was 14 August. The last patient was infected in the second half of September (date of onset 24 September). (Figure 1)

The age of cases ranged between 16 and 80 years (median 52 years). Ten cases were male and four female.

FIGURE 1

Confirmed cases of West Nile virus infection, by week of onset of symptoms, Hungary, August–September 2008 (n=14)



Four cases were residents of the Hajdú-Bihar county, two were living in Budapest, but supposedly exposed in the incubation period at the lake Balaton (Veszprém county) or in the Matra mountains (Heves county), two in Jász-Nagykun-Szolnok county and single cases were identified in Csongrád, Pest, Fejér, Győr-Moson-Sopron, Vas and Zala counties (Figure 2). The geographical distribution of cases shows that in contrast with previous years the infection has now appeared also in the north-western part of the country which is endemic for tick-borne encephalitis.

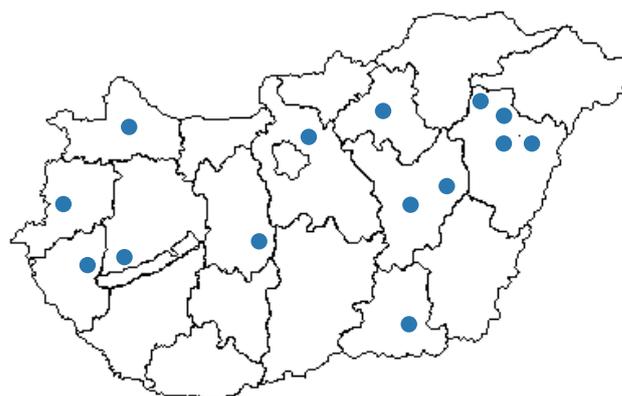
Epidemiological investigations

To date, detailed epidemiological investigations have been performed for 12 of the 14 cases, using a disease-specific case investigation form. None of these cases had travelled abroad during three weeks before the onset of disease. There was no history of blood transfusion or tissue/organ transplant. None of the cases was vaccinated against yellow fever or tick-borne encephalitis (as WNV belongs to the same genus of the family Flaviviridae, the presence of antibodies against one of these viruses may influence the course of illness caused by another virus of the same genus). No person with high fever or neurological symptoms has been identified among household or other contacts of the cases.

Seven of the investigated cases reported a history of mosquito bite.

FIGURE 2

Geographical distribution of cases of West Nile virus infection, by place of potential exposure, Hungary, August – September 2008 (n = 14)



Laboratory investigations

Investigations at the national reference laboratory for viral zoonoses found IgM and IgG antibodies against WNV (titre = ≥ 640) in samples from 14 cases using indirect fluorescent antibody and haemagglutination inhibition tests. Titration of antibodies was performed in parallel tests for tick-borne encephalitis and WNV. These were thus considered confirmed cases of WNV infection.

Results of laboratory investigations of samples taken from another five patients with suspected WNV infection are still pending.

Response measures

The Department of Epidemiology of Communicable Diseases of the Hungarian National Centre for Epidemiology (Országos Epidemiológiai Központ) received the laboratory results of the first two cases of WNV infection on 22 September. It then immediately informed the Hungarian National Blood Transfusion Service (Országos Vérellátó Szolgálat) about these and the following confirmed cases, and found out that in the preceding six months none of the patients had given blood. Information about these human cases was also shared with the veterinary authorities at the Central Agricultural Office of the Ministry of Agriculture and Rural Development (Földművelésügyi és Vidékfejlesztési Minisztérium Mezőgazdasági Szakigazgatási Hivatalának Központja). The European Commission, European Centre for Disease Prevention and Control (ECDC), European Union (EU) Member States and the World Health Organization (WHO) were informed about the cases via the Early Warning and Response System (EWRS).

Every potential blood donor fills in a detailed questionnaire and is examined and interviewed by a physician. If no exclusion criteria are identified the National Blood Transfusion Centre accepts the blood donation. According to the regulations issued by the Hungarian Ministry of Health in 2005 [2] which incorporated the 2004 European Commission directive implementing the EU blood safety directive [3], patients diagnosed with WNV infection are excluded from blood, tissue and organ donation for 28 days after recovery. In addition, persons living in or visiting areas (in Hungary or abroad) where cases of WNV infection have occurred should be excluded from blood donation for the period of 28 days. This rule has been applied to travellers returning from abroad. However, it is difficult to execute it at present when cases occur in the country in densely populated areas (including the capital city) covering almost half of the territory. Therefore, in practice, to prevent the risk of WNV transmission the donor selection procedure has been strengthened regarding both the medical examination and the interview.

Furthermore, the National Centre for Epidemiology drafted a proposal of standard measures which should be applied following the confirmation of human cases. These include surveillance for animal cases (deaths in birds, neurological symptoms in horses) in the area where the exposure of human cases is believed to have taken place. According to this proposal, if the veterinary surveillance reveals animal cases mosquito control measures including larvicide and adulticide disinfestations have to be implemented. However, due to considerable costs, these measures should be applied only in epidemically justified situations, and in an area of up to 1 km in diameter around a case. The authority responsible for implementing these measures is the National Public Health and Officer Service who indicates the area around a human case and engages a company to carry out the disinfestations.

To date, such mosquito control measures have not been employed in connection with WNV, but only with the aim to decrease the mosquito population in tourist areas and in cases of imported malaria. No vector surveillance has been performed, either.

Background information

In Hungary it has been mandatory to notify cases of aseptic meningitis since 1950 and cases of infectious encephalitis since 1967. Serologic tests for lymphocytic choriomeningitis virus (LCMV), tick-borne encephalitis virus (TBEV), enteroviruses, West Nile virus (WNV) and herpes simplex virus (HSV) have been performed already since the 1950s and 1960s to determine the etiology of these diseases.

Since 2004, laboratory analysis for WNV has been performed not only in cases of suspected WNV infection or in cases of meningitis or encephalitis upon the request of the clinician, but also following negative results of diagnostic testing for more common infections such as tick-borne encephalitis or lymphocytic choriomeningitis.

Between 2003 and 2007 a yearly average of six cases of WNV neuroinvasive infection were diagnosed by the reference laboratory. Although none of the cases diagnosed by the laboratory were fatal, severe illness can develop in those patients who have flavivirus antibodies (e.g. anti-WNV) if they become infected by another flavivirus (e.g. TBEV) [4].

In a seroprevalence study conducted in Hungary in 1999 the presence of WNV antibodies was found in 30 of the 5,312 persons examined (0.56%) [5]. The majority of people with antibodies were residents of the south-eastern part of the country (Alföld), including Pest, Jász-Nagykun-Szolnok, Hajdú-Bihar, Bács-Kiskun, Csongrád and Békés counties. As now the virus has also appeared in TBEV endemic western territories of the country (such as Győr-Moson-Sopron, Vas, Veszprém and Zala counties), more caution is needed to avoid the antibody-dependent enhancement phenomenon (e.g. controlled vaccination against TBEV of persons previously infected by WNV).

Conclusion

The activity of the vector as observed at the end of the season has been very low, so further new cases of WNV infection are not expected to occur this year. The number of cases registered this year has been higher than in the past five years but still rather low. Nevertheless, it is important to improve the detection and control procedures to better respond to the changing epidemiological situation. Faster laboratory diagnosis would enable a more timely implementation of response measures. The results of serological analysis used for confirmation of WNV cases are in most cases too late to apply control measures. For this purpose it is very important to develop good collaboration with the veterinary sector to exchange information and undertake joint actions. At present the Ministry of Health and the National Centre for Epidemiology are preparing to sign an agreement with the Ministry of Agriculture, regarding collaboration with the veterinary authorities, in particular exchange of information and vector control measures.

Our experience has also revealed the need for clear and feasible EU regulations regarding blood donation that would guarantee safety but not jeopardise the blood supplies.

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