

WEST NILE VIRUS MENINGITIS IN A PATIENT FROM BACĂU COUNTY

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Abstract: West Nile virus, discovered in 1937 in Uganda is most commonly transmitted to humans by the bite of mosquitoes, wild birds especially playing the part of the host. After an infected mosquito bite, the incubation period of the infection in humans is between 3-15 days. A small number of cases of infection with this virus have been reported in the world after transfusion or transplantation. Most cases of infection with this virus are asymptomatic, in 15-20% of cases symptoms are reported, which are similar to a mild flu and in less than 1% of cases, neurological symptoms may occur, such as meningitis, meningoencephalitis associated with fever. There is no specific treatment or vaccine to prevent infection in humans. The main preventive measure is the introduction of measures against mosquitoes.

Cuvinte cheie: virus West Nile, zona nou afectată, meningită

Rezumat: Virusul West Nile, descoperit în 1937 în Uganda, este transmis cel mai frecvent la om prin mușcătura de țânțari, pasărele în special cele sălbatice jucând rolul de gazdă. După înțepătura unui țânțar infectat, perioada de incubație a infecției la om este cuprinsă între 3-15 zile. Un număr mic de cazuri de infecție cu acest virus a fost raportate în lume urmare a transfuziilor sau transplantului. Cele mai multe cazuri de infecție cu acest virus sunt asimptomatice, în 15-20% dintre cazuri sunt raportate simptome similare unei gripe ușoare și în mai puțin de 1% dintre cazuri pot apărea simptome neurologice ca meningita, meningoencefalita asociată cu febră. Nu există un tratament specific sau un vaccin pentru prevenirea infecției la om. Principala măsură de prevenire este cea de aplicare a măsurilor împotriva țânțarilor.

INTRODUCTION

In Romania, after the epidemic of 1996, there was implemented in the territory considered at risk (Danube counties) during vector's activity (May to October) the meningitis/meningoencephalitis surveillance system / with West Nile virus.

In 2009, following the results of the serological studies in animals [source ANSVSA], surveillance was in humans in all counties of the country. West Nile virus infection surveillance is passive and consists of notification to hospitals by the department of epidemiology within the counties directions of public health of the cases with clinical manifestation neuroinvasive using the following definition: any person aged ≥ 15 years with fever and any of the following events meningitis / meningoencephalitis / encephalitis with CSF clear..

Confirmation of cases is in line with EU case definition (clinical manifestation and detection of West Nile virus nucleic acid in blood or CSF or specific immune response (Ig M) anti West Nile virus in CSF and serum).

In May to October 2013 season, 142 cases were notified being suspected of meningitis / meningoencephalitis with West Nile virus, of which 24 were confirmed (see map).

Figure no. 1. Number of cases confirmed with the West Nile virus



CASE REPORT

The case presented is the first confirmed case of West Nile meningitis in Bacău County, this county being considered a newly affected area.

The data presented are collected following the epidemiological investigation and recorded in the surveillance

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sheet, specific to the case of West Nile virus infection in the patient's admission sheet and from the statistics of the National Centre for Surveillance and Control of Communicable Diseases. The method used is the presentation of the case.

History

On October 3, 2013, the Laboratory of vector-borne viral infection within the Cantacuzino Institute reported the detection of IgM anti-Ac West Nile virus in CSF and serum samples from a patient of 67 years old in a rural locality from Bacau County.

Clinical data

The patient's symptoms start with fever on 05.09.2013 (38-39 C), nausea, vomiting, abdominal pain. She is admitted on 08.09.2013 in the Department of Surgery within the County Hospital with a diagnosis of "acute pancreatitis gallbladder under observation". During hospitalization, the patient's general condition worsens, with the occurrence of stiff neck, signs of meningeal irritation, Kernig sign present, drowsiness, confusion, memory loss, psychomotor agitation. It is raised the suspicion of meningitis and the advice of the infectious disease specialist is asked for, who practiced lumbar puncture confirming the suspicion and the patient was transferred on 12.09.2013 to the infectious diseases unit with a diagnosis of "acute viral meningitis, average clinical form of the disease, diabetes mellitus type II".

Laboratory data

On admission, in addition to the usual tests, the patient's blood and urine are collected for culture. The result is negative, but *Escherichia coli* is isolated from urine. Later, when clinical signs of meningeal irritation occurred, lumbar puncture was performed (on 10.09.2013), which showed the clear hypertensive aspect of CSF 175 elements / mm², of which 97% lymphocytes and 3% neutrophils, glycorahia and normal clorurorahia, increased albuminorahia (1625.3 mg / l).

To establish the etiology of meningitis with clear CSF, following assumptions were raised: neoplastic possible given that in patients' history, there was a breast cancer surgery, but cranial CT and MRI were normal, tuberculosis (negative CSF culture for BK) and viral. For viral etiology, on 09.17.2013 samples were collected for the diagnosis of infection with West Nile virus (CSF and serum acute phase), according to the methodology of supervision, (1) which were sent to the Laboratory of Viral vector-borne infections within Cantacuzino Institute for diagnosis. The results were positive on 10.03.2013 (atc IgM antiWest Nile virus in CSF of 5.067, and in acute phase serum, of 4.988).

According to EU case definition (2) the case was classified, being confirmed with West Nile virus meningitis.

The patient followed a symptomatic treatment (anti-inflammatory steroids, painkillers, hypertonic solutions, nootropic), antibiotic treatment (for urinary infection) and antidiabetic and antihypertensive treatment for pre-existing chronic conditions, and after 11 days of hospitalization, she was discharged cured.

The epidemiological investigation conducted by epidemiologists specialists within the County Public Health Department showed favourable conditions to the development of mosquito population in the area: in the west part of the village, there is Berești lake (river Siret), and the main stream of the commune is Matcani stream.

During the period of exposure (22.08 -02.09.2013), the patient did not travel, she recognized mosquito bites at home given that she had no mechanical protection to windows and did not use any mechanical or chemical means to protect her against bites mosquito. The research of the register of GP consultations in the village did not identify other people who have been to the

doctor with other manifestations of WN infection (fever, exanthema) in the second half of August.

Following the information request from the County Sanitary and Veterinary Direction on the results of these animal infections during that season, there have not been reported mortality in animals (horses, birds) higher compared to previous years.

Measures ordered

The local doctors and those from infectious diseases hospitals in the county were informed about the confirmation of the case, with the recommendation to further investigate for the infection with West Nile virus the patients with fever of unknown origin (possible West Nile fever). The local authority was informed with the recommendation to enforce measures against mosquitoes bite. There have been recommended measures of population health education, to see a doctor in case of illness, they were informed about mechanical and chemical protection measures against mosquito bites, about sanitation measures of housing and spaces around them.

The National Institute of Transfusional Haematology and the National Transplant Authority was informed with the recommendation to enforce measures to donors according to EC Decision 33/2004 (3) and to the national plan to ensure transfusion safety against the risk of transfusion transmission with WNV infection.(4) There have been suspended from donation until October 31, 2013 donors residing in the same locality with the patient's home. The donors' interview and questionnaire included questions regarding the transit of the affected areas of the country, abroad with the temporarily exclusion for 28 days, those who confirmed that, and conducting a thorough medical examination of donors and the inclusion of additional questions in the interview. All donors receive a statement of admission to immediately inform in the situation they find any episode of fever or other signs of illness within 15 days of the date of donation.

CONCLUSIONS

The patient did not travel in the period 22.08 - 09.02.2013 (exposure period), so the risk of infection in another area of the country or abroad is excluded. She recognized mosquito bites at home taking into account that she did not use any mechanical / chemical protection against the mosquito bites and in the village, there have been not applied vector control measures. The weather conditions this summer (rain followed by high temperature) favoured the development of the vector. Although there was no recent data on the movement of West Nile virus in birds and animals (horses) in Bacau, a study conducted in 2011 (5) gives a prevalence of WNV antibodies in horses of 6.25%.

The presence of virus circulation in the north-east of the country is supported both by the results of the serological surveillance of this infection in animals and by the record of human cases (in 2011, seroprevalence in horses in Iasi County was of 63.7% and 4 human cases recorded in 2011-2013). Moreover, even during the epidemic of 2010, it was observed a changing epidemiological profile of this infection with the occurrence of cases in areas unaffected / unknown previously to be affected.(6)

The case presented demonstrates the expansion of virus circulation with the emergence of human cases in an area known to be affected so far (Bacău county). Therefore, surveillance of meningitis with clear cerebrospinal fluid for this etiology should be considered seriously in summer even in areas hitherto considered free.

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