

ZIKA: AN OLD VIRUS WITH A NEW FACE

ZIKA: STAR VIRUS Z NOVIM OBRAZOM

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Editorial

ABSTRACT

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Zika virus is a mosquito-borne flavivirus that represents a public health emergency at the ongoing epidemic. This obscure virus was limited to sporadic cases in Africa and Asia, until the emergence of Zika virus in Brazil in 2015, when it rapidly spread throughout the Americas. Most Zika virus infections are subclinical or characterized by mild febrile illness. However, neurological complications, including Guillain-Barré syndrome in adults, and congenital anomalies, including microcephaly in babies born to infected mothers, raised a grave concern. Currently, there is no specific antiviral treatment or vaccine available for Zika virus infection. Thus, international public health response is primarily focused on preventing infection, particularly in pregnant women, and on providing up-to-date recommendations to reduce the risk of non-vector transmission of Zika virus.

IZVLEČEK

Ključne besede:

virus Zika,
porajajoča se okužba,
mikrocefalija,
nevrolški zapleti,
spolni prenos

Zika je virus iz rodu flavivirusov, ki se prenaša s komarjevim pikom, in predstavlja javnozdravstveno grožnjo v trenutni epidemiji. Ta nepoznan virus je bil omejen na sporadične primere v Afriki in Aziji vse do pojava v Braziliji leta 2015, ko se je bliskovito razširil v obeh Amerikah. Večina okužb z virusom Zika je subkliničnih in se kažejo kot blaga bolezen z vročinskim stanjem. Najbolj zaskrbljujoči pa so nevrolški zapleti, vključno s sindromom Guillain-Barré pri odraslih ter prirojene nepravilnosti, kot je mikrocefalija pri novorojenčkih, ki se rodijo okuženim materam. Trenutno ne obstaja specifično protivirusno zdravljenje ali cepivo proti okužbi z virusom Zika. Odziv mednarodnega javnega zdravja se osredotoča na preprečevanje infekcije, predvsem pri nosečih ženskah in podajanju posodobljenih priporočil za zmanjšanje tveganja za nevektorsko prenašanje virusa Zika.

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1 INTRODUCTION

Zika virus (ZIKV) is an arthropod-borne flavivirus that was first isolated from a febrile Rhesus macaque monkey and from *Aedes africanus* in the Zika forest of Uganda in 1947. The first human infection was reported from Nigeria in 1954, and the evidence of virus circulation was observed in the next few decades within several African and Southeast Asian countries (1). Symptomatic ZIKV infections were limited to sporadic cases only. Thus Zika virus did not attract interest from medical or scientific community until 2007, when the first major outbreak of ZIKV infection appeared in Micronesian island Yap, where nearly 75% of the population were infected. The second large outbreak occurred in 2013-14 in French Polynesia, where ZIKV was implicated in approximately 30,000 symptomatic cases with an unusual increase in the number of Guillain-Barré Syndrome (GBS) cases (2). Subsequently, ZIKV infection has expanded through the Pacific islands, and, in May 2015, initial cases were confirmed in Northeast Brazil. Since then, ZIKV epidemic spread dramatically across the Latin America and Caribbean (3). Shortly after ZIKV emerged in Brazil, frequent reports of microcephaly, foetal brain malformations and other neurological disorder coincided with ZIKV infections (4). Thus, on 1 February 2016, the World Health Organization (WHO) declared that the clusters of cases of microcephaly and neurological disorders occurring in areas with Zika virus transmission represent a public health emergency of international concern (5).

2 TRANSMISSION

Zika virus is primarily transmitted to people through the bite of an infected mosquito from the *Aedes* genus, mainly *Aedes aegypti*. *Aedes* mosquitoes usually aggressively bite during the day, peaking during early morning and late afternoon. The same mosquito species transmits dengue, chikungunya and yellow fever viruses. Other *Aedes* mosquito species, like tiger mosquitoes (*A. albopictus*), can potentially serve as vectors, which indicates a possible threat of ZIKV spread in the United States and/or Southern Europe (1, 2). There is increasing evidence of non-vector-borne transmission, particularly mother-to-child transmission and sexual transmission. Vertical transmission (from mother to foetus) has been most frequently described with adverse outcomes in babies, presenting with congenital brain abnormalities, including microcephaly or foetal death (4). ZIKV can be detected in seminal fluid for up to two months after the onset of clinical symptoms. All but one published cases of sexual transmission have been from the symptomatic male, whose sexual activities may have occurred before, during or after Zika symptom onset, to their partner (6).

Other modes of transmission, such as blood transfusion and solid organ and tissue transplantations, are being investigated (7).

3 CLINICAL PRESENTATION AND COMPLICATION

The epidemiological data suggest that only 20% of ZIKV infections are symptomatic. The incubation period of Zika virus disease is not clear, but it is likely to be a few days. The symptoms are mild and self-limiting, involving fever, arthralgia, maculopapular rash, conjunctivitis, headache, retro-orbital pain and myalgia. These nonspecific symptoms are similar to other arbovirus infections, such as dengue and chikungunya, the diseases that share the same endemic areas and virus vectors as ZIKV (1). Thus, the diagnosis of ZIKV infection in endemic regions based on clinical presentation alone can be wrong. The other usual differential diagnoses are measles, rubella, parvovirus and enterovirus infections, and malaria (2). However, the main concern is increasing evidence that ZIKV infection results in severe neurological complications - Guillain-Barré syndrome in infected patients, and in congenital abnormalities with microcephaly, spontaneous abortion, and intrauterine growth restriction of babies (4, 8). After a comprehensive review of evidence, there is scientific consensus that Zika virus is a cause of microcephaly and Guillain-Barré syndrome. However, many questions remain, including various spectra of birth defects caused by vertical ZIKV transmission, the degrees of risks of adverse outcomes among fetuses with regard to the ZIKV infection and the foetus gestation ages, and other possible (co)factors that might enhance ZIKV infection (5).

4 TREATMENT

There is no specific antiviral treatment available for Zika virus disease. Treatment is symptomatic and supportive and can include good hydration, and the use of analgesics, antipyretics and anti-histamines for pruritic rash. Due to the similar, nonspecific symptoms and geographic distribution, patients with suspected ZIKV infections should be evaluated and managed for possible dengue or chikungunya virus infection (4). Acetylsalicylic acid (Aspirin) and other non-steroidal anti-inflammatory drugs (NSAIDs) should be avoided until dengue can be ruled out, in order to reduce the risk of haemorrhage (1). People infected with Zika should be protected from further mosquito exposure during the first week of illness, so as to decrease the risk for human-to-mosquito-to-human transmission, and thus minimize the risk of local transmission (9).

5 PREVENTION, CONTROL AND CURRENT RECOMMENDATIONS

No vaccine or prophylactic treatment is currently available for Zika virus infection. Vaccine projects are at an early stage, but ZIKV vaccine is technologically feasible. However, there are still many unanswered questions about the virus, which need to be solved before a potential vaccine or specific immune prophylaxis (e.g., for pregnant women) is administered to the public (1, 4). Primary prevention is based on the protection against mosquito bites. Personal protection measures, such as applying mosquito repellents and wearing long-sleeved shirts and long trousers to cover as much of the body as possible, especially during mid-morning and late afternoon hours, are necessary. Sleeping in screened or air-conditioned rooms or the use of insecticide-treated mosquito bed nets are recommended. A continuous control of mosquito population by removing their possible breeding sites should be applied around everyone's dwellings (2).

It is recommended that pregnant women and women who are planning to become pregnant should postpone non-essential travel to areas of active ZIKV transmission. Persons with chronic illnesses or immune disorders are requested to consult their doctors before travelling to ZIKV endemic areas (10).

Sexual transmission of Zika virus through semen has been repeatedly documented in several different countries lately. Therefore, to reduce the risk of sexual transmission and potential pregnancy complications related to ZIKV infection, practicing safer sex (including the use of condoms) or abstaining from sexual activity is recommended throughout pregnancy to protect the foetus. In addition, there is also a recommendation for the people returning from ZIKV endemic areas that they should apply safer sexual practices or abstain from sex for at least 8 weeks after their return, even if no symptoms are present. Besides, if men experience Zika virus symptoms, they should practice safe sex or consider abstinence for at least 6 months. Couples that are planning pregnancy should wait at least 8 weeks before trying to conceive if no symptoms of Zika virus infection appear, or 6 months if one or both members of the couple are symptomatic (11).

CONFLICTS OF INTERESTS

The authors declare that no conflicts of interest exist.

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ETHICAL APPROVAL

The study was conducted in accordance with the code of Ethics of the World Medical Association (Declaration of Helsinki).

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