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Research Article

Current Issues on Zika Virus Disease: The Nigeria Perspective

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Abstract: Zika virus sickness causes a mild fever, rash, headache, arthralgia, myalgia, asthenia, and non-purulent conjunctivitis, and symptoms appear two to seven days after contact with an infected mosquito. The zika virus is what causes the zika virus sickness, or just zika. Seldom do symptoms appear, and when they do, they could be comparable to dengue fever symptoms. Possible symptoms include maculopapular rash, fever, red eyes, joint pain, headaches, and a likely duration of about 2 days. Possible adverse effects include rashes, fever, conjunctivitis, aching muscles and joints, general malaise, and headaches. Zika virus infection has also been strongly linked to Guillain-Barré syndrome (GBS), which is characterised by rapidly developing muscle weakness brought on by immune system injury to the peripheral nerve system. Most often, Aedes mosquitoes, particularly Aedes aegypti in tropical areas, spread the disease. Based on the typical symptoms, a wide differential diagnosis can be made for zika virus infection. Reverse transcriptase polymerase chain reaction (RT-PCR) screening enables a more accurate diagnosis. Although there is now no vaccination available, staying inside and avoiding mosquito bites will help you avoid a lot of diseases. Despite the rarity of occurrences of Zika virus sickness in the most populous nation in Africa, it is crucial to increase public knowledge in order to avoid any potential health issues.

Keywords: zika, virus, illness, fever, symptoms, outbreak.

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Introduction

Infection with the Zika virus, which is spread by mosquitoes, manifests itself two to seven days after the bite as a low fever, rash (frequently maculo-papular), headaches, arthralgia, myalgia, asthenia, and non-purulent conjunctivitis [1]. According to the World Health Organization (WHO) [2], the Zika virus is what causes Zika virus disease (ZKVD), also known as just "zika." According to the European Institute for Disease Prevention and Control, symptoms when present can resemble dengue fever [3]. A maculopapular rash, fever, red eyes, joint discomfort, and headaches are only a few of the symptoms that might last for two days or longer [4-5]. The original illness was not fatal, according to the European Institute for Disease Prevention and Control [3]. Mother-to-child transmission during pregnancy can result in microcephaly (a disease of insufficient brain growth) [8] and other forms of brain abnormalities in some kids, according to Rasmussen et al. [6] and a report by the Centers for Disease Control and Prevention (CDC) [7]. Guillain-Barré syndrome (GBS) has been associated to infections in adults [3]. In Uganda, a Rhesus macaque monkey was

found to have the zika virus for the first time in 1947 [9]. In the 1950s, numerous African nations began recording health statistics [2]. According to the World Health Organization [2], between the 1960s and the 1980s, human diseases were uncommon in Africa and Asia. Since 2007, Zika virus outbreaks have occurred in Asia, the Pacific, the Americas, and Africa. Zika virus epidemics have occurred in the majority of the Americas and other nations where the Aedes aegypti mosquito is a frequent nuisance. Further proof that sexual transmission is a potential mode of transmission can be found in the zika virus infections of travellers from regions where the virus is aggressively spreading. Zika virus-related illness was said to have declined internationally in 2017, however transmission is still minimal in a number of American nations and other endemic areas [2,10]. Researchers in Europe discovered the first Zika virus cases in 2019; similarly, researchers in India discovered Zika virus epidemic activity in 2021. Zika virus infections spread by mosquitoes have been reported in 84–89 countries and territories so far [10].

This critique intends to do two things: (1) inform readers and (2) bring attention to the Zika virus illness in Nigerian culture.

Symptoms

Just around one in five Zika infected persons actually get sick, according to the CDC. They often present three to fourteen days after infection and are mild and brief (commonly lasting two to seven days) [2]. Some of the symptoms include rashes, fever, conjunctivitis, soreness in the muscles and joints, malaise, and headaches [2, 8]. It is necessary to obtain laboratory confirmation of Zika virus infection because these symptoms are typical of both arboviral and non-arboviral disorders [2]. Although the exact amount of time between a mosquito bite and the onset of symptoms is unknown, it is most likely between a few days and a week [8]. Most people with this illness only experience symptoms for a few days to a week [11], making home treatment and discharge from the hospital appropriate.

Throughout the course of the mother's pregnancy, the unborn child may be exposed to the illness. The most significant side effect that could result from it is microcephaly. Large-scale deformities are expected in up to 42% of live infants [12], but the complete spectrum of birth defects brought on by infection during pregnancy is still unclear. The most frequent correlations, according to de Paula et al. [13], have been with problems with brain and eye development, like microcephaly and chorioretinal scarring. The prevalence of systemic illnesses is also declining [14], including hydrops fetalis, which results in an abnormal buildup of fluid in the foetus. These problems can cause problems with vision, hearing, nutrition, seizures, developmental delays, intellectual disabilities, and seizures, according to Boeuf et al. [15].

The peripheral nervous system is affected by Guillain-Barré syndrome (GBS), a rapidly progressing variant of myasthenia gravis that may ultimately cause paralysis [16]. Although while a person can have both GBS and Zika at the same time, it may be challenging to demonstrate that the former caused the latter [17]. Zika virus has been discovered to be present in human Schwann cells [18]. Several nations badly struck by the Zika virus have seen an increase in the number of new cases of Guillain-Barré syndrome (GBS). 42 cases of GBS were reported during the 2013–2014

outbreak in French Polynesia, compared to 3–10 instances annually prior to the pandemic [19].

It has been asserted that because of its connection to dengue fever, it is more likely to result in bleeding issues. Hematospermia, or blood in the sperm, has only ever been documented in one occasion [20].

Transmission

The dengue and yellow fever viruses are thought to be the zika virus's closest relatives by Brack [21]. Although West African monkeys and rodents have proved serologically positive for the virus [22], the mosquito is the actual reservoir.

The main carriers of the disease are Aedes mosquitoes, especially Aedes aegypti in tropical areas. Aedes africanus, Aedes apicoargenteus, Aedes luteocephalus, Aedes albopictus, Aedes vittatus, and Aedes furcifer are just a few of the Aedes species that have been isolated [22,23,24]. Aedes hensilli served as the virus's vector during the South Pacific pandemic in 2007 on Yap Island, while Aedes polynesiensis was in charge of the disease's transmission in French Polynesia in 2013. By sexual contact between infected men and their partners, the Zika virus can also be spread [26]. Two weeks after infection, Zika virus was discovered in one person's sperm 100,000 times more frequently than in blood or urine, per Mansuy et alstudy .'s [27]. The length of infectious virus persistence and the cause of the difference in sperm concentrations from other body fluids are both still unknown. It has also been observed that men who did not exhibit any symptoms of Zika infection can transfer the disease [28]. Regardless of disease, the CDC encourages all males who have visited affected areas to wait at least 6 months before contemplating having children [29]. According to Hills et al. [30], there haven't been any documented instances of women sexually transferring to their partners. The zika virus can spread by vaginal, anal, or oral contact [31].

Although there have been no confirmed examples of transmission from breastfeeding, it has been discovered that breast milk contains an infectious virus [32]. Concerned that the virus might spread through blood transfusions, several countries experiencing an outbreak have put in place donor screening procedures [33]. All blood products must pass a Zika test, according to a requirement [34] from the US Food and Drug Administration.

Pathogenesis

The salivary gland cells and midgut epithelial cells of the mosquito are where Zika virus replication starts. The virus can be found in the saliva of the mosquito that transmitted it after 5–10 days. The virus can enter Langerhans cells, epidermal keratinocytes, and skin fibroblasts when a mosquito bites a human. After a virus has entered the lymph nodes and the circulation, pathogenesis is thought to continue [35]. Zika antigens were discovered in the nucleus of infected cells by Godoy et al. [36], defying the theory that flaviviruses replicate in the cytoplasm. According to Chiu [37], the viral protein NS4A can cause microcephaly by obstructing a brain pathway that

regulates the development of new neurons. Both NS4A and NS4B, which are neighbours, prevent fruit flies from developing eyes [38].

Diagnosis

Due to overlap with other arboviruses in the region, Zika virus infection might be challenging to identify merely based on clinical signs and symptoms [39]. The CDC claims that there is a wide spectrum of potential Zika virus infections to take into account based on "typical clinical signs." Leptospirosis, malaria, rickettsia, group A streptococcus, rubella, measles, and parvovirus, enterovirus, adenovirus, and alphavirus infections (including chikungunya, Mayaro, Ross River, Barmah Forest, O'nyong'nyong, and Sindbis viruses) are other serious risks to take into account in addition to dengue fever [40]. The vast majority of individuals in the small case series had typical routine chemistry and complete blood counts, according to Waggoner et al. [41]. There have been numerous reports of mild leukopenia, thrombocytopenia, and increased liver transaminases.

Reverse Transcriptase – Polymerase Chain Reaction (RT-PCR)

Reverse transcriptase polymerase chain reaction can detect the Zika virus in persons with chronic illnesses (RT-PCR). The World Health Organization (WHO) [25] advises performing RT-PCR screening on serum obtained within one to three days of the onset of symptoms or on saliva samples obtained within the first three to five days due to reports from the European Center for Disease Prevention and Control [3] that the duration of viremia can be brief.

Zika virus was found in saliva more frequently than serum by comparing similar samples [41]. Up to 14 days after the onset of symptoms, urine samples can be collected and analysed [42], as the virus has been shown to live in urine longer than in saliva or serum. The Zika virus does not appear to go latent, and symptoms only manifest after a maximum of 11 days, according to Hayes [22]. In the future, serology may be used to pinpoint particular IgM and IgG antibodies against the Zika virus. As early as 3 days after the start of an illness, IgM antibodies can be discovered in the bloodstream [22]. Serological interactions between vaccines for other, closely related flaviviruses, such as dengue and West Nile virus, and vaccines for flaviviruses are possible [43]. As of 2019 [44], the Food and Drug Administration has approved the use of two tests to identify antibodies to the Zika virus.

Prevention

There is currently no vaccine or cure for Zika virus infection. There is no anti-Zika vaccine on the market right now [2]. The following safety measures are advised by the World Health Organization (WHO) [2] to prevent getting the Zika virus.

Avoidance of Mosquito Bites

Avoiding mosquito bites all day and into the early evening is essential to avoiding contracting the Zika virus, especially if you are expecting, trying to conceive, or have young children. Wearing clothing that covers as much of the body as possible (preferably in a light colour) and closing doors and windows are all examples of

personal protection measures [2]. Another is applying insect repellent containing DEET, IR3535, or icaridin to skin or clothing in accordance with the product labelling. Children, pregnant women, and those who sleep during the day or early at night should use mosquito nets. Both locals and visitors should observe the fundamental safety precautions stated above.

Nearby houses, businesses, and schools have stagnant water where Aedes mosquitoes breed. To lessen mosquito breeding grounds, try covering water storage containers, draining flowerpots, removing debris and getting rid of old tyres [2].

Sexual Transmission Prevention

The dangers of sexually transmitting the Zika virus in areas where it is present should be made clear to everyone affected with the virus and their sexual partners, especially pregnant women [2]. In order for sexually active men and women to make an educated choice about whether and when to become pregnant and to avoid any potential negative pregnancy and foetal outcomes, WHO [2] advises that they be counselled and provided with a wide variety of contraceptive options.

A woman should have quick access to emergency contraception and counselling if she has had unprotected sex and is concerned about getting the Zika virus. During pregnancy, women should refrain from sexual activity or practise safer sexual behaviours, such as wearing condoms.

Men and women who have visited an area where Zika virus transmission is ongoing are advised by WHO [2] to engage in safer sex or refrain from having intercourse for at least three months and two months, respectively [26]. Sexual partners of pregnant women should use safe sexual practises or refrain from engaging in sexual activity in places where the Zika virus is endemic.

Treatment

The Zika virus sickness is presently incurable, according to the World Health Organization [2]. Those who have symptoms such a rash, fever, or joint discomfort should unwind, hydrate well, and take antipyretics and/or analgesics as necessary. Due to the possibility of bleeding, nonsteroidal anti-inflammatory medicines should be avoided until dengue virus infections have been ruled out. Patients should get in touch with a doctor or therapist if their symptoms get worse. A pregnant woman should see a doctor for laboratory testing, information, counselling, and other clinical treatment if she lives in an area where the Zika virus is still being transmitted or if she is showing signs of the infection.

Conclusion

Although the case of Zika fever is rare in Africa’s most populous nation, it is still imperative to create awareness to safeguard the health of the people.

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