

# Zika Virus: A Roar After Years of Whispering

Abdullah Balkhair<sup>1\*</sup>, Khuloud Al-Maamari<sup>2</sup>, Fatma Ba Alawi<sup>2</sup> and Badriya Al-Adawi<sup>2</sup>

<sup>1</sup>Infectious Diseases Unit, Department of Medicine, Sultan Qaboos University Hospital, Muscat, Oman

<sup>2</sup>Department of Microbiology and Immunology, Sultan Qaboos University Hospital, Muscat, Oman

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The current extensive emergence and spread of Zika virus throughout South America, Central America, and the Caribbean is unprecedented, extraordinary, and potentially threatening global health.<sup>1</sup> In light of the increased incidence of microcephaly and other neurological disorders believed to be linked to Zika virus in South America,<sup>2</sup> the World Health Organization (WHO) has declared Zika a public health emergency of international concern on 1 February 2016.

Zika virus is a single-stranded RNA virus in the family “*Flaviviridae*” and is related to dengue, yellow fever, West Nile, and Japanese encephalitis viruses.<sup>3</sup> Zika virus was discovered incidentally in Uganda in 1947 in the course of mosquito and primate surveillance, and it was first described in humans in 1952 in Uganda and Tanzania. Since then, sporadic cases have been reported from Africa and Asia.<sup>4</sup> The virus remained confined to a narrow niche in Africa and Asia until 2007 when the first documented outbreak occurred in the Federated States of Micronesia.<sup>4</sup> This was followed by further outbreaks in the Pacific Island nations between 2013<sup>5</sup> and 2014, and now in Central and South America since 2015.<sup>6</sup>

Zika virus is mainly transmitted by the bite of an infected female *Aedes aegypti* mosquito.<sup>6</sup> Other means of transmission (which require further scrutiny) include maternal-fetal transmission,<sup>7</sup> sexual transmission,<sup>8</sup> and transmission via blood through transfusion.<sup>9</sup> Zika virus disease has been relatively a mild disease presenting with fever, rash, arthralgia, and conjunctivitis. The ongoing pandemic confirms that Zika is predominantly a mild or asymptomatic disease. However, in the last two years, Zika virus has gained attention after increasing concerns with its hypothesized association with Guillain-Barré

syndrome in the French Polynesia and with birth defects, mainly microcephaly, in Brazil. During Zika virus epidemic in French Polynesia in 2013, the incidence of Guillain-Barré syndrome increased by twenty folds, raising the assumption of a potential implication of Zika.<sup>10</sup>

Of greater concern is the explosive Brazilian epidemic of microcephaly. Last month, Brazil reported a twenty-fold annual increase in cases of newborn babies with microcephaly.<sup>11</sup> Additionally, ocular findings in few of these babies with microcephaly were described.<sup>12</sup> It is crucially important to confirm or dismiss a causal link between Zika infection of pregnant women and the occurrence of microcephaly. However, there is currently no definitive proof of any causal relationship. If proven, Zika will be the first flavivirus to have teratogenic effects. It is challenging for scientists to understand why Zika is now behaving in this current explosive nature with widespread outbreaks and clinically alarming manifestations after over 60 years of quiescence. Mutations resulting in enhanced neurotropism and acquired population immunity in endemic areas are among some of the speculations, which will require a scientific inquest.

Diagnosis of Zika virus is based on detection of the viral RNA by polymerase chain reaction (PCR) in serum.<sup>13</sup> This test needs to be performed early in the acute phase of the illness to enable detection of viremia. Serum antibody testing can also be used for diagnosis but challenged with cross-reactivity with other arboviruses, mainly dengue virus.<sup>13</sup> There is currently no specific antiviral agents that can be used to treat or prevent infection with Zika virus. There are no Zika vaccines in advanced development. Prevention of Zika is therefore directed at aggressive mosquito control, minimizing breeding sites and contact with *Aedes* mosquitoes.<sup>14</sup> Pregnant women

are advised to avoid travelling to areas with active Zika virus transmission.

In Oman, the vector *Aedes aegypti* has been identified in limited parts of Dhofar region at a low scale as part of the entomological surveys conducted in the region between 2006 and 2014.<sup>15</sup> This is being followed by extensive vector control efforts. In the event of virus introduction to the region, we predict that it is extremely unlikely to result in sustained transmission or outbreaks. This is largely due to very limited vector population and intensive vector control efforts in Oman. Close monitoring and community education on strategies to eliminate mosquitoes breeding sites are essential. Early recognition of imported cases of Zika is critical to prevent the introduction of the virus to Oman. We advocate screening for Zika virus in returned symptomatic travelers from areas with active Zika virus transmission. Additionally, symptomatic pregnant women with clear epidemiological links need be screened for Zika virus.

Zika is still a pandemic in evolution, and many vital questions about it remain to be answered. Zika virus is truly a disturbing global threat necessitating prompt and coordinated global actions for stopping it from continue roaring.

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