

ZIKA VIRUS: BRAZIL AND BEYOND

Observations and suggestions for managing babies with ocular manifestations of this disease.

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The Zika virus (ZIKV) is a flavivirus that is mainly transmitted by *Aedes aegypti*, one of the most common mosquitoes worldwide, also responsible for spreading dengue, chikungunya, yellow fever, and West Nile virus.¹ The emergence of ZIKV has caused great alarm in many countries because of its capac-

ity to cause microcephaly in newborns, along with other malformations, including hearing loss, limb anomalies, and ocular findings (Figure 1), which characterize a new clinical condition called congenital Zika syndrome (CZS).²

In June 2016, we visited the Altino Ventura Foundation (FAV) in Recife, Brazil, the epicenter of the ZIKV epidemic (Figures 2-6). A nonprofit eye hospital, FAV provides eye care to approximately 35,000 patients each month in one of the poorest regions of the country. Since the beginning of the Zika outbreak, the institution's team has examined more than 300 babies that were suspected to have acquired ZIKV infection in utero. This philanthropic institution has not only addressed the ocular findings associated with ZIKV but has also developed early intervention and multidisciplinary rehabilitation (visual, auditory, motor, and intellectual) strategies for patients with these findings.

GENERAL OBSERVATIONS

During our visit, we examined and photographed approximately 25 babies affected with CZS. It was shocking to see firsthand the extent of the systemic involvement of this virus in these children and the immense burden it places on their mothers and on Brazilian society.

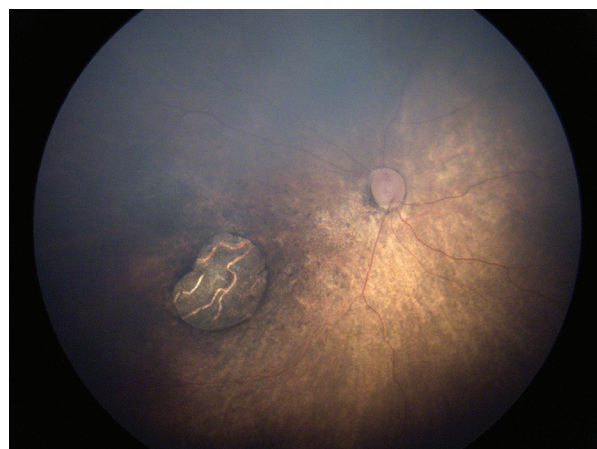


Figure 1. Fundus image showing optic nerve hypoplasia and pallor, chorioretinal scar, and retinal pigmentary changes in the macular region, with vascular attenuation.



AT A GLANCE

- The Zika virus (ZIKV), transmitted by a mosquito common worldwide, can cause microcephaly in newborns, along with other malformations, including hearing loss, limb anomalies, and ocular findings, which characterize congenital Zika syndrome (CZS).
- One of the biggest challenges to the health care profession is getting laboratory confirmation of CZS.
- Every baby exposed to ZIKV should receive an eye screening and undergo fundus photography.



Figure 2. Maria Berrocal, MD, examining a baby with CZS.



Figure 3. Maria Berrocal, MD (left), and Audina Berrocal, MD (right), documenting fundus lesions using the PanoCam Pro (Visunex Medical Systems) portable imaging system.



Figure 4. Mothers and babies in therapy at FAV rehabilitation center in Recife, Brazil.

The lifelong medical and socioeconomic ramifications of babies born in Brazil with CZS are dramatic, particularly given the population's limited resources. It was evident to us that most of the mothers we met were in their late

teens, lived in significant poverty, were uneducated, and came from the poor areas of Pernambuco, the Brazilian state that includes Recife.

Because abortion is illegal in Brazil, it is expected that the incidence of CZS in newborns will continue to increase.³ To meet this challenge, FAV, through its rehabilitation center, has created an early intervention program for motor, intellectual, visual, and auditory assessment. Visual rehabilitation with glasses and stimulation begins early, and mothers are taught how best to care for their babies.

FAV has also founded a support group for mothers and families that provides psychological support, encourages the exchange of experiences between families, and helps raise funding for transportation and for daily life products such as diapers, milk, and clothes.

Of the babies we examined and photographed, those with the most severe cases of CZS had contracted the virus in the first trimester. Interestingly, a substantial number of these mothers had no recollection of experiencing any symptoms of the disease during their pregnancies.^{4,5} No doubt this has crucial implications worldwide, for ZIKV can go unnoticed and thus underdiagnosed.

CHALLENGES

Currently, one of the biggest challenges to the health care profession is getting laboratory confirmation of CZS. Real-time polymerase chain reaction serology and IgM antibody-capture enzyme-linked immunosorbent assay testing are considered the most accurate tests for intrauterine infection, but these tests only became available after February 2016, and they are costly and of limited availability.² Consequently, most testing of these babies is pending.

The second most frustrating challenge is that the current serology test is not reliable because of its high cross-reactivity with other flaviviruses such as dengue fever, which is endemic in Brazil.¹ Thus, until we have better ways to confirm exposure, we advise that, in countries affected by ZIKV, routine laboratory screening should be performed on all pregnant women. In addition, regardless of the mother's symptoms, we believe that all babies born in epidemic areas should be submitted to an ophthalmic examination with fundus documentation after birth.

CONCLUSION

Our experience has taught us some important lessons. First, regardless of the presence or absence of microcephaly, every baby exposed to ZIKV should receive an eye screening examination. Second, a fundus photograph should also be taken of every baby that undergoes screening because subtle changes can be missed by clinical examination alone. Third, education and prevention must be a priority in countries affected by this devastating intrauterine disease. Fourth, as far as early intervention is concerned,



Figure 5. Babies in therapy at FAV rehabilitation center in Recife, Brazil.



Figure 6. Baby with microcephaly caused by CZS.

psychological support and early multidisciplinary rehabilitation are of utmost importance.

This ongoing epidemic reminds us that, due to globalization, diseases tend to spread faster and reach a greater extent. The ZIKV epidemic is expected to reach most countries in tropical and subtropical regions in the near future. Just recently, Florida's Department of Health reported the first cases of local transmission of ZIKV in the United States.⁶ In addition, more than 7,800 cases have been reported in the US territory of Puerto Rico, which is located 1,000 miles from Florida.⁷ Therefore, the sooner we have an effective plan in place to prevent, screen, identify, and treat this disease, the better. ■

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