



Revista MVZ Córdoba
ISSN: 0122-0268
ISSN: 1909-0544
revistamvz@gmail.com
Universidad de Córdoba
Colombia

Mattar, Salim; Montero A, Jaime; González T, Marco
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Revista MVZ Córdoba, vol. 24, no. 2, 2019, May-August, pp. 7177-7179
Universidad de Córdoba
Montería, Colombia

DOI: <https://doi.org/10.21897/rmvz.1605>

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Editorial

The history of dengue is not yet finished

Salim Mattar^{1*} Ph.D; Jaime Montero A² MD; Marco González T³ M.Sc

¹ Co-editor Revista MVZ Córdoba, Universidad de Córdoba, Colombia.

² Clínica Salud Social, Sincelejo, Colombia.

³ Editor en Jefe Revista MVZ Córdoba, Universidad de Córdoba, Colombia.

The first epidemic of dengue reported in the Americas occurred in the eighteenth century in Philadelphia, North of the United States of America and was first described in 1780 by Benjamin Rush; curiously in a cold climate zone. Since that outbreak, dengue has affected most of the countries in the region, but the most significant number of cases is concentrated in Latin America and the Caribbean.

Dengue can be caused by any of the four serotypes (DENV-1, DENV-2, DENV-3, and DENV-4) and is transmitted by the mosquitoes *Aedes aegypti* and *Aedes albopictus*; mainly urban vectors with high adaptability and resistance to insecticides. These mosquitoes circulate primarily in countries of Latin America and the Caribbean, Southeast Asia and in the Western Pacific islands. Although dengue is considered a tropical infectious disease, autochthonous cases have been reported in the south of the United States and some countries in Europe such as Italy, France, Greece, and Spain.

Dengue represents a severe problem to public health, especially if we consider that more than 2.500 million people live in areas at risk and more than 100 countries have reported the presence of this disease in their territories, and it is estimated that they become infected around up to 400 million people each year. The region of the Americas is one of the most affected by dengue, and its most clinical severe presentation is hemorrhagic dengue (1).

A c c o r d i n g t o P A H O / W H O (1), there are around 100.000 cases today. However, data from Brazil indicate that there are 500.000 reported cases in Latin America and 285 deaths were attributed to dengue. Except for Chile, all the countries of Latin America have reported cases of dengue. In the health information platform for the Americas (PLISA) (2), it is observed that dengue was circulating in the Americas when the reemergence of Chikungunya and Zika appeared; dengue maintained a constant endemic transmission until 2016 and probably underestimated due to the epidemiological novelty of the two new emerging viruses. Dengue fever declined in 2017; however, at the end of 2018, it reemerged in Colombia and the Americas.

In Colombia, the increase of cases of dengue may be associated with the current El Niño phenomenon. In the epidemiological week number 52 of December of 2018, 1424 probable cases of dengue were notified, 591 cases in that week and 833 informed of delayed; in the same epidemiological week 52 of 2017, 399 cases were reported.

In February 2019, 44.825 cases had been reported; 21.242 (47.4%) without warning signs; 23.057 (51.4%) with warning signs and 526 cases (1.2%) of severe dengue. The departments with the highest incidence were Norte de Santander (bordering Venezuela), Meta (bordering Venezuela), Antioquia, Córdoba, Tolima, Santander (bordering Venezuela), Valle del Cauca, Cesar (bordering Venezuela), Barranquilla, Atlántico, La Guajira (bordering Venezuela), Cundinamarca, Casanare (bordering Venezuela) and Huila reported 81.0% of the cases (3).

How to cite (Vancouver)

Salim M, Montero J, González TM. The history of dengue is not yet finished. Rev MVZ Córdoba. 2019; 24(2):7177-7179. DOI: <https://doi.org/10.21897/rmvz.1597>



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In March 9th, 2019 (epidemiological week number 10), INS reported 1,997 probable cases of dengue. There are currently reported 17,861 cases, 7,670 (42.9%) without warning signs, 9,967 (55.8%) with warning signs and 224 (1.3%) of severe dengue. 62.3% (11,125) of the cases come from Norte de Santander, Meta, Tolima, Córdoba, Cesar, Huila, Córdoba, Antioquia and Santander. Between 2018 and 2019 the total incidence is 62,290 cases; this data demonstrates the re-emergence of dengue disease in Colombia and the tropical Americas.

On the other hand, as expected by the natural immunity conferred by the Chikungunya and Zika viruses in their passage through Colombia, the prevalence of these two diseases decreased dramatically. Chikungunya with only 663 and Zika with 857 cases, in contrast to dengue, 44,825 cases were reported in 2018 (Figure 1).

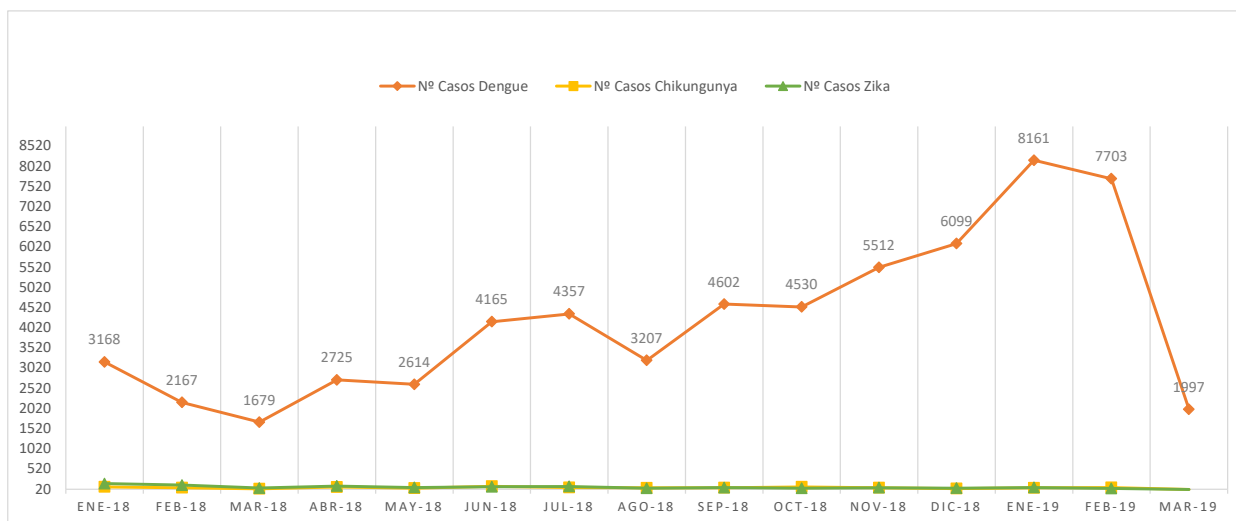


Figure 1. Endemic channel of Dengue, Chikungunya and Zika, 2018.

The statics shows the significant problem of dengue disease since infection by one of the four serotypes produces long-term immunity against reinfection by that serotype. However, successive infection with the different serotypes becomes an epidemiological risk factor in developing severe presentations of the disease. The four serotypes circulate simultaneously in Colombia and tropical America.

The control to prevent infection with the dengue virus could occur with the introduction of a vaccine, but currently, there is only one licensed vaccine available (CYD-TDV, DengvaxiaTM) although several vaccines are in different stages of development (5). The first monovalent vaccines experimented since 1944 and in 1963 an attenuated DENG-3 vaccine was obtained 50% reduction in cases. The results of Phase III clinical trials with CYD-TDV in pediatric patients from Asia and Latin America demonstrated an acceptable safety profile and efficacy >70%. However, the problem of exposure to the different serotypes of endemic dengue continues unabated, and its efficacy varies according to prior immunity of the population, circulating serotypes, and age.

As things stand, it is not very clear eradication of this old but current virus, and therefore, the most effective protection measure remains to avoid mosquito bites. The strategic actions of the Ministries of Health of the countries of tropical America should continue to be aimed at the environmental education of the population and encourage more effective participation of the Regional Health Authorities. In both cases, the primary activities should be aimed at controlling or eliminating the main vector breeding sites, especially those that are directly related to anthropogenic activities. In a world increasingly contaminated by pesticides, using them would not seem like a consistent strategy to control mosquitoes. Perhaps in the research and development of natural products from plants we have the solution. Why not investigate the ancestral culture of our indigenous people?

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