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revistamvz@gmail.com
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González T, Marco; Mattar V, Salim

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The puzzle of new etiological agents in the Americas: Punta del Toro virus another piece?

Marco González T
University of Córdoba, Colombia
marcogonzaleztoz@gmail.com

Redalyc: <http://www.redalyc.org/articulo.oa?id=69353271001>

Salim Mattar V
University of Córdoba, Colombia
mattarsalim@hotmail.com

RESUMEN:

In a recent study of undifferentiated tropical fevers in an endemic area of Colombia, it was shown that not all acute fevers are caused by the dengue virus (1). The complex clinical-epidemiological panorama of tropical fevers has become a puzzle of difficult resolution due to the appearance of new etiological agents in the Americas such as Chikungunya and Zika. For the differential diagnosis Hantavirus, Arenavirus, Orupuche, tick thrombocytopenic virus, Heartland virus, leptospira and malaria should be considered.

THE PUZZLE OF NEW ETIOLOGICAL AGENTS IN THE AMERICAS: PUNTA DEL TORO VIRUS ANOTHER PIECE?

In a recent study of undifferentiated tropical fevers in an endemic area of Colombia, it was shown that not all acute fevers are caused by the dengue virus (1). The complex clinical-epidemiological panorama of tropical fevers has become a puzzle of difficult resolution due to the appearance of new etiological agents in the Americas such as Chikungunya and Zika. For the differential diagnosis Hantavirus, Arenavirus, Orupuche, tick thrombocytopenic virus, Heartland virus, leptospira and malaria should be considered.

Recently in Panama, 4,852 serum samples from patients suspected of having dengue were analyzed. However, of these samples, 1,667 (34%) were negative for dengue (2). Of the negative samples, 201 of them were analyzed by amplifying the gene L (long), highly conserved for Phelobovirus RNA (family Bunyaviridae). The gene L detects the viruses Toscana, Naples, Sicilian, Avocado, Punta del Toro and Rift Valley. Phylogenetic analyzes demonstrated the presence of the Punta del Toro virus (PTV), which is closely related to the Cocle, Capira, Campana, Buenaventura and Leticia viruses, the latter detected in Colombia in 1964 and 1987 in Valle del Cauca and Amazonas respectively (2-6).

The Buenaventura virus was cultivated from *Lutzomyia* sp species collected in the forests of the Colombian Pacific coast, near the city of Buenaventura. Those arboviruses studies were carried out between 1964 and 1984 by the CDC (4) (<https://wwwn.cdc.gov/arbovat/default.aspx>) and Tesh et al (5). Leticia virus was obtained as a single isolate from specimens of *Lutzomyia* sp collected near the city of Leticia, in the colombian Amazonas area (4,5). In contrast, attempts to cultivate and isolate PTV in Panama were unsuccessful (2). These Bunyaviruses are transmitted by sandfly mosquitoes, although some are transmitted by ticks, but their role in human and animal pathogenesis is still unknown.

Sandflies are reportedly implicated in the transmission of PTV in Panama. *Lutzomyia* sp develops in humid tropical places, such as caves, animal burrows and tree barks (3). Panama, Brazil and Colombia share borders with high frequency of passengers and their tropical habitats are in fact equal. These countries also share the problem of logging and the disappearance of natural habitats of some species.

The vectors appear to have adapted to these modifications, contributing to the propagation of some diseases transmitted by vectors not yet discovered (7). *Lutzomyia* sp seems to adapt to urban or semi-rural areas, and for the case of PTV, Rift Valley virus, other mosquitoes such as *Culex* and *Aedes* sp must be studied for the presence of Bunyaviridae.

From the clinical point of view, it is important to analyze that the symptoms of PTV are similar to those of the tropical acute fevers prevalent in tropical America (1,2). Fever, headache, retroorbital pain, myalgia, leukopenia and low back pain are common among PTV symptoms, except for the rash that in the Panamanian study was more frequent in patients with dengue than in PTV (22% vs 54%; Ratio 0.23, 95% CI 0.08-0.66, $p=0.01$) (2).

In the cases of patients infected by PTV in Panama, none showed hemorrhagic syndrome or shock (2).

In late editorials, the possibility of the arrival of new etiological agents to take into account in the differential diagnosis of acute tropical fevers such as Chikungunya (alphavirus), Zika (flavivirus), Oropuche (Bunyaviridae), Heartland (Bunyaviridae). The PTV (Bunyaviridae) seems to be in several tropical areas of Colombia, and it is therefore urgent to establish an epidemiological surveillance of vectors and compatible cases. Finally, the phylogenetic proximity of the Buenaventura and Leticia viruses to the PTV suggests that in Colombia, strains of Bunyaviridae with pathogenic capacity, such as PTV, that produce clinical cases compatible with arbovirus infections could be circulated

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