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## LETTER TO THE EDITOR

**Dengue, chikungunya and Zika co-infection in a patient from Colombia**

In Latin America, until 2014, dengue (DENV) was the only virus transmitted significantly by *Aedes* spp. [1]. Unfortunately since that year, chikungunya (CHIKV) arrived as a relevant secondary arboviral disease, with the possibility of co-circulation in endemic zones as well even of co-infections [1,2]. Nevertheless, after more than a year of co-circulation of both arboviruses, there has been a lack of reports of such co-infections in the region [2]. In addition to this during May 2015 first cases of infection due to Zika virus (ZIKV) were reported in Brazil and later [3], in September, in Colombia. Thus, imposing the co-circulation of these three arboviruses and also the possibility, none previously reported in other regions of the world, such as the Pacific or Asia, of co-infections of all of them in the same patients. This last, is herein reported.

A 49-year-old male from Sincelejo, Sucre, Colombia developed febrile illness (38 °C), bilateral conjunctivitis (Fig. 1) and a pruritic maculopapular rash at his upper back and arms for 4 days before consultation. No myalgias or arthralgias were referred by the patient. Initially, serum samples for DENV and CHIKV were taken, both resulting in positive IgM against each virus. Also a blood sample for malaria thick and thin smears was taken, being negative. Patient was traveling during the last month all over multiple municipalities of Sucre and Bolivar departments, including zones where in addition to DENV and CHIKV circulation, ZIKV has been also reported. Then, a serum sample for ZIKV was also taken, being analyzed by using RT-PCR, which was also positive. A physical examination revealed general weakness, a pulse rate of 110 beats/min and blood pressure of 140/90 mmHg. No hemorrhagic or neurologic findings were found, including no signs of Guillain–Barre syndrome. His ophthalmological assessment found a non-purulent conjunctivitis in both eyes, but a normal funduscopy. Also a mild cervical lymphadenopathy and



**Figure 1** Conjunctivitis in a patient with DENV/CHIKV/ZIKV co-infection from Colombia.

a mild edema of lower limbs were found. A complete blood count showed no thrombocytopenia, a leukocyte count of  $7.7 \times 10^9$  cells/L, a hemoglobin level of 15.6 g/dL and a hematocrit of 55%. At an ECG, ventricular extrasystole and a left hemiblock was found. A chest X-ray and abdominal ultrasound were normal. Patient was treated symptomatically with successful evolution.

We report for the first time in Colombia and Latin America a co-infection between DENV and CHIKV, and probably, among the first globally, with also ZIKV. Multiple coinfections with the first two and malaria have been reported before [4]. No

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synergistic effects of these viral infections were observed because the patient did not require hospitalization and recovered after a mild clinical course. This has been reported between DENV and ZIKV infections in New Caledonia [5].

Infection with ZIKV results in a clinical syndrome similar to illness resulting from infection with DENV, CHIKV but also other tropical pathogens [3,6]. Nevertheless, our patient presented limb edema which is not reported in DENV or CHIKV, conjunctivitis which occurs in lower frequency in CHIKV, and maculopapular rash which is more frequent in ZIKV than in the other two arboviral infections [3,6]. Although severe cases of ZIKV infection have not been described [7], the spectrum of clinical disease remains uncertain and considering the rapidly evolving epidemics of this new arbovirus in Latin America, this deserves further assessment. Clinicians should consider CHIKV and ZIKV in the differential diagnosis of dengue-like infection in patients from or returning from endemic areas in Colombia and Latin America where these arboviruses are currently circulating [8]. Finally, more research on CHIKV and ZIKV is required, as particularly in the last there is very limited information on many issues [9], including potentially new ways of non-vector transmission (e.g. sexual) [10].

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## Competing interests

None declared.

## Ethical approval

Not required.

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