VIA MEDICA

LETTER TO THE EDITOR

Int Marit Health
2018; 69, 2: 149–150
DOI: 10.5603/IMH.2018.0022
www.intmarhealth.pl

ISSN 1641–9251

Chikungunya virus infection, immunosuppression and respiratory tract infections: are they associated?

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We have carefully read the interesting review article by Wasilczuk and Korzeniewski, about immunocompromised travellers (ICTs) [1]. We agree on the fact, that if acquired, vector-borne diseases, such as chikungunya (CHIK) [2], may be more severe in ICTs. Also, on the fact that respiratory tract infections (RTIs) are one of the most common travel-related health problems. However, we would like to discuss recent data from our group showing that CHIK would represent a potential risk for the development of RTIs, possibly due to immunosuppression.

From 2014 to 2016 we analysed and followed up 11,518 patients from Hospital San Pedro y San Pablo, La Virginia, Colombia in order to detect CHIK infection and, later, to assess the occurrence of RTIs. During that period, 364 patients were CHIK+ (serologically confirmed chikungunya infection and 11,154 were CHIK–, with a median follow-up of 20.2 months, that after its consultation developed any RTI (defined according the ICD-10 codes J00-J22 [acute upper and lower RTIs, including influenza and pneumonia]). Global and disease-specific relative risk (RRs) with its 95% confidence intervals (95% CIs) were calculated. HIV-positive patients were excluded from these analyses.

In CHIK+ patients, RR for any RTI was 1.117 (95% CI 1.001–1.247), when compared with those without CHIK. For acute laryngotracheitis (ALT), RR = 2.857 (95% CI 1.572–5.192); acute tracheitis, RR = 1.810 (95% CI 1.359–2.409); acute maxillary sinusitis, RR = 1.750 (95% CI 1.270–2.412); acute laryngitis, RR = 1.707 (95% CI 1.048–2.778); acute pharyngitis, RR = 1.667 (95% CI 1.005–2.765); acute bronchiolitis, RR = 1.631 (95% CI 1.544–1.722); streptococcal tonsillitis, RR = 1.288 (95% CI 1.149–1.443); acute bronchitis due to rhinovirus, RR = 1.217 (95% CI 1.024–1.447). From them, 20% developed RTIs at 9 months. Non-significant differences were observed for influenza and pneumonia.

Although we did not assess specifically immune function in these patients, one study performed recently in Colombia [3] showed evidence that after CHIK infection (9 months later) CD4 T-lymphocytopaenia would be found (> 60% with < 300 CD4/mL), consistent with the risk of developing opportunistic and other related infections, as we found association with RTIs up to almost 3 times higher, when compared to controls. Most of the reports on the chronic consequences of CHIK have been focused on rheumatological sequelae, such as chronic inflammatory rheumatism [4], but few studies have related CHIK to RTIs [5, 6].

Previous epidemiological studies in India, suggested that during CHIK outbreaks, RTIs, such as those caused by adenovirus, influenza and respiratory syncytial virus, would be increased and even coinfecting [5]. In addition, we analysed the trends for reporting cases of both conditions in Colombia during the same period (2013–2015), and we found significant associations between CHIK and ALT (Fig. 1), but also an increase in RTIs during the CHIK outbreak of 2014 (Fig. 1), similar to what was reported in India [5]. Although the presented association needs further studies, its implications should be considered by travel medicine practitioners and in general those providing care to patients with CHIK.

As Wasilczuk and Korzeniewski stated [1], interventions and guidance should be adequate to each traveller's im-

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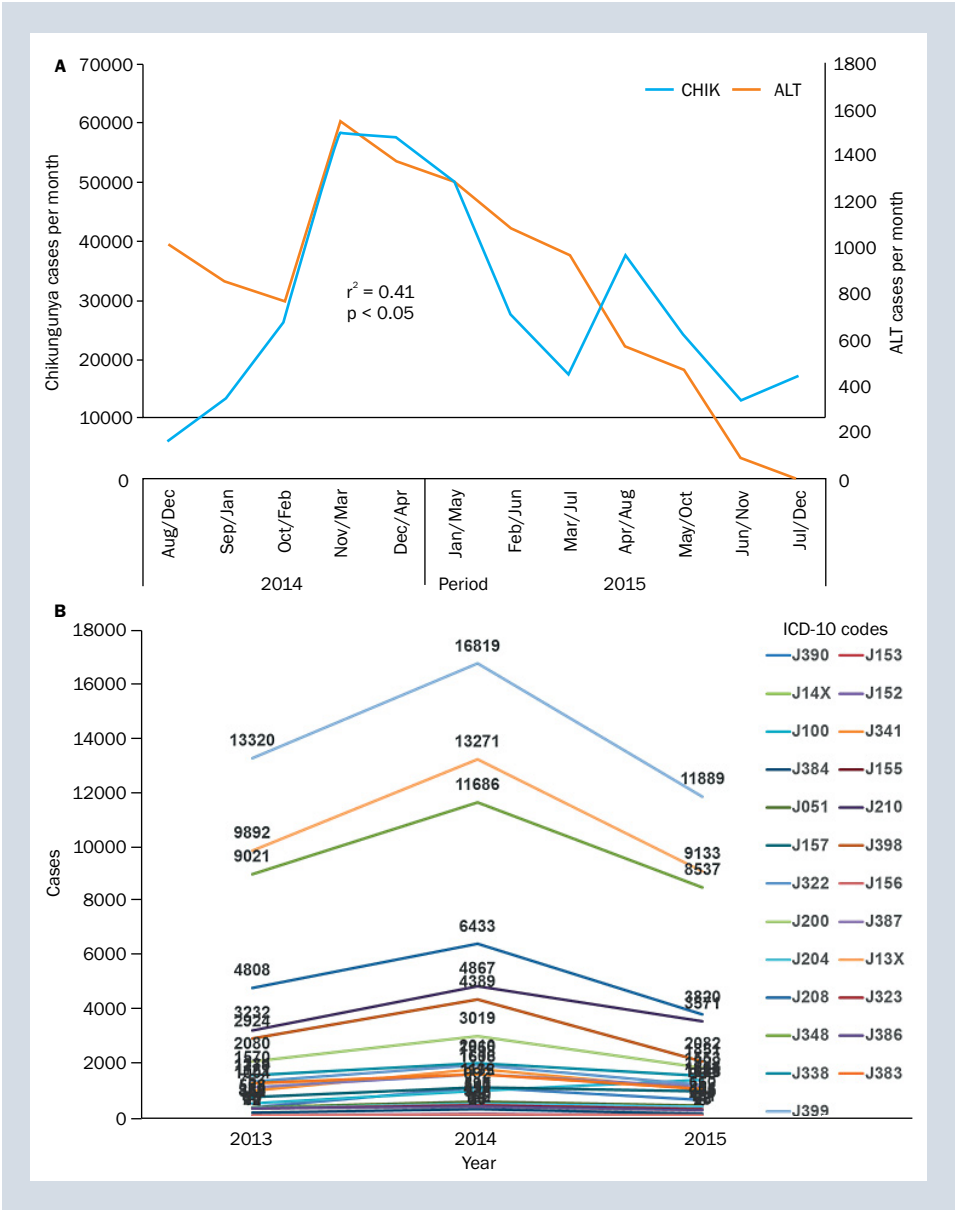

Figure 1. A. Variation in the report of chikungunya and acute laryngotracheitis (ALT) in Colombia during 2014 and 2015. **B.** Variation in the report of CHIK and respiratory tract infections in Colombia during 2013–2015

munocompromised state and their general health, including informing the patients about the risks associated with acute and chronic consequences of CHIK, which would comprise RTIs too.

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