

PERSISTENCE AND HIGHER ZIKA VIRUS LOAD IN CUTANEOUS CAPILLARIES THAN IN VENOUS BLOOD

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ZIKV was detected in Brazil in 2015 and has since spread as rapidly as chikungunya virus through South and Central America and the Caribbean Islands, despite shorter, lower viraemia and a longer replication period in the vector. Viraemia has always been measured in venous blood, whereas mosquitoes bite into cutaneous capillary blood.

To compare viraemia in the two blood compartments, we evaluated the kinetics of ZIKV RNA loads in sequential serum samples from venous and skin capillary blood collected from 16 ZIKV-infected patients on days 1–11 after onset of symptoms.

ZIKV RNA loads in capillary and venous blood compartments were correlated (Spearman's correlation test, $r = 0.60$, $P < 0.0001$) but were significantly higher in capillaries (excepted in two patients) (Wilcoxon signed rank test, $P = 0.0001$). The median duration of ZIKV detection after the onset of symptoms was significantly longer in capillary than in venous blood (log rank test, $P = 0.016$; hazard ratio = 2.97 , 95 CI $1.22-7.21$). The duration of viraemia was longer in capillary than in venous blood from 11 patients (69%, 95 CI 46–92), equal in the two compartments in four patients (25%), and longer in venous blood in only one patient (6%).

Persistence in capillaries was also reported in dengue cases after day 5 of the disease, and it was suggested that this could be useful in molecular diagnosis of infection, especially in the field, from dry capillary blood spots. These results suggest that symptomatic ZIKV-infected patients should be protected longer from mosquito bites to limit vectorial transmission, which might be critical to fight against spread of ZIKV in North America. Finally, our results raise the question of the role of the microcirculation in the physiopathology of ZIKV and its transmission dynamics.