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Letter to the Editor

Microhematospermia in acute Zika virus infection

Zika virus (ZIKV) spreads to people primarily through the bite of infected *Aedes aegypti* and *Aedes albopictus* mosquitoes. Nevertheless, the prolonged presence of ZIKV and/or its components at high levels in the semen of acutely infected patients is well established, raising the possibility of sexual transmission as an alternative mechanism of infection.[1,2]

Hematospermia, or blood in the semen, has been documented in some of the cases in which sexual transmission of ZIKV is a point at issue, but its prevalence remains unknown, as the condition is usually asymptomatic and may go unnoticed. Moreover, the occurrence of microhematospermia in patients with acute ZIKV infection has not been established.[3,4]

The occurrence of microhematospermia, in the absence of hematuria, was recently confirmed in three otherwise normal adult Venezuelans with acute, uncomplicated, symptomatic ZIKV infection.

Initial plasma samples obtained during the viremic phase and sequential paired samples of urine and semen collected at the 2-, 3-, and 4-week follow-up visits were assayed by means of a conventional in-house end-point PCR technique at a reference laboratory (Centre of Microbiology and Cellular Biology, Laboratory of Virus Biology, Venezuelan Institute of Scientific Research). A medical questionnaire revealed no signs of urinary tract infection, prostatitis, urethritis, or cystitis, and urinalysis showed no abnormalities. IgM capture ELISA tests for dengue and chikungunya viruses (Novalisa; NovaTec Immundiagnostica GmbH, Dietzenbach, Germany) were negative.

Although direct and macroscopic examinations of the semen revealed no hematospermia, tests for occult blood based on the detection of hemoglobin and myoglobin pseudoperoxidase activity (Combi-screen; Analyticon Biotechnologies, Lichtenfels, Germany) were initially positive in all three cases. Of note, simultaneous urine samples were negative by the same technique.

Urine was consistently negative for ZIKV by PCR. On the other hand, semen samples remained positive for several weeks. In two patients, the presence of ZIKV in semen outlasted the occurrence of microhematospermia for at least 1 week (see Figure 1).

Hematospermia, either clinically evident or microscopic, appears to be common following ZIKV infection. Indeed, new data available after this paper went to print support the notion that blood in samples of semen is not only a frequent finding, but may also be a valuable predictor of the presence of ZIKV.[5] Even though symptoms of prostatitis have been reported in men with ZIKV-positive semen, it is not currently known whether disruption of the integrity of the reproductive tract occurs in this gland or elsewhere. Further studies are necessary to assess whether an infected man with patent or microscopic hematospermia is more likely to harbor higher concentrations of ZIKV in semen and, therefore, has a higher risk of transmitting it sexually.

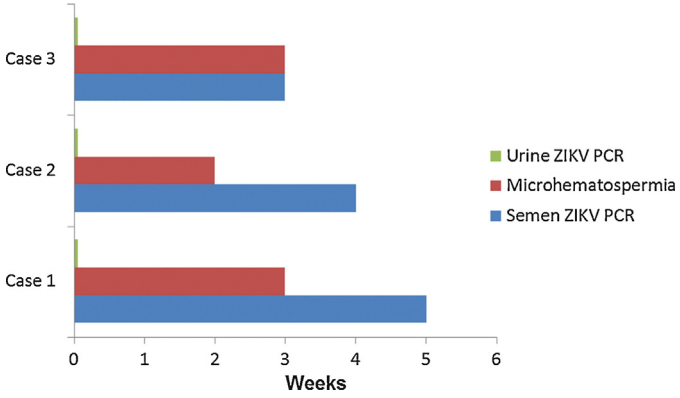

Figure 1. Persistence of microhematospermia and Zika virus in semen and urine by endpoint PCR, in three acutely infected Venezuelan patients.

Conflict of interest: No conflict of interest to declare by any of the authors.

References

1. Mansuy JM, Dutertre M, Mengelle C, Fourcade C, Marchou B, Delobel P, et al. Zika virus: high infectious viral load in semen, a new sexually transmitted pathogen? *Lancet Infect Dis* 2016;**16**:405.
2. D'Ortenzio E, Matheron S, Yazdanpanah Y, de Lamballerie X, Hubert B, Piorkowski G, et al. Evidence of sexual transmission of Zika virus. *N Engl J Med* 2016;**374**:2195–8.
3. Musso D, Roche C, Robin E, Nhan T, Teissier A, Cao-Lormeau V. Potential sexual transmission of Zika virus. *Emerg Infect Dis* 2015;**21**:359–61.
4. Foy BD, Kobylinski KC, Chilson FJL, Blitvich BJ, da Rosa AT, Haddow AD, et al. Probable non-vector-borne transmission of Zika virus, Colorado, USA. *Emerg Infect Dis* 2011;**17**:880–2.
5. Huits RM, De Smet B, Ariën KK, Van Esbroeck M, de Jong BC, Bottieau E, et al. Kinetics of Zika virus persistence in semen. *Bull World Health Organ [Submitted] Epub* 2016 July 6. http://dx.doi.org/10.2471/BLT.16.181370

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