

# A new case of meningitis due to Toscana virus

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Received March 16, 2011

Accepted September 02, 2011

To editor: Toscana Virus belongs to the genus Phlebovirus, family Bunyaviridae. They are transmitted in the Mediterranean area by *Phlebotomus perniciosus* and *Phlebotomus perfiliewi* sandflies (Braitto *et al.*, 1997). Toscana virus (TOSV) was first isolated in 1971 from *Phlebotomus perniciosus* in Monte Argentario (Grosseto, Tuscany) (Verani *et al.*, 1982). Sandfly-borne TOSV was recognized as a leading cause of acute meningitis between May and October in Central Italy and in other northern Mediterranean countries, TOSV is among the 3 most prevalent viruses associated with meningitis during the warm seasons (Charrel *et al.*, 2005). TOSV must be considered an emerging pathogen especially in those travelers who had visited endemic areas in the summer. Although TOSV has been detected in sandflies in Italy (Braitto *et al.*, 1998), we are not aware of any historically documented human infection with TOSV in Calabria. We report a TOSV infection in a 32-year-old Italian male patient, who works and lives in the province of Cosenza. On July 10, 2010 he was admitted to the emergency department of Cosenza Hospital. He had suffered from a severe headache since the previous day and had dysphasia. On admission, the patient had neck rigidity with a fever reaching 38°C, vomiting and nausea. In recent months the patient had not traveled to other re-

gions. White blood cell count and C-reactive protein levels were normal. Cerebrospinal fluid (CSF) taken on the day of admission was slightly turbid, and resulted in a white cell count of 95/mm<sup>3</sup> (normal range 0-5) with 80% lymphocytes. The other values obtained were: IgG (CSF) 15.30 mg/dl (normal range 0.48-5.86), albumin (CSF) 139 mg/dl (normal range 13.90-24.60) and glucose (CSF) 43 mg/dl (normal range 40-70). Computed tomography and magnetic resonance imaging (MRI) were normal.

Real time-PCR results for CSF were negative for Herpes Simplex Viruses, Varicella Zoster Virus and Enteroviruses. Serology for Coxsackie viruses, Echo viruses and HIV were negative. Microscopy and PCR for Mycobacterium were negative. The patient did not show signs of immunodeficiency. TOSV serology is routinely performed in the hospital and TOSV meningitis was suspected for positivity toward anti-TOSV IgM by indirect immunoenzymatic tests (Chorus Diesse, Senese) but anti-TOSV IgG was negative. TOSV RNA was also detected in the CSF by using reverse transcription PCR and nested amplification (region: TOSV N protein) (Nanogen Advanced Diagnostic, Italy). After 5 days, the serology for TOSV was repeated and seroconversion occurred for IgG which confirmed the diagnosis. The patient only received support care. He had a complete neurologic recovery in 5 days and was sent home. At home he had a headache for 15 days, only when standing up. He returned to the hospital for MRI which resulted negative and he had a complete recovery in one month. Mycobacterium culture was also negative after two months. This report demonstrates the presence of TOSV in Calabria by molecular detection and serological confirmation. In 2002 and in 2010, we evaluated the percentages of seropositivity in adults who come to our laboratory for

**KEY WORDS:** Toscana virus, Meningoencephalitis, Phlebotomus, Mediterranean, Nested PCR

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check-ups (ages ranging from 15 to 60) belonging to the population of Cosenza: in 2002 a total of 9.8% gave positive anti-TOSV IgG results and in 2010 a total of 17% gave positive anti-TOSV IgG results (Chorus Diesse, Senese) (data not published).

Since TOSV infection is often asymptomatic or the clinical picture is not relevant diagnosis is frequently missed (Dobler *et al.*, 1997, Braitto *et al.*, 1997). We think that more molecular and serologic surveillance studies should be performed in Mediterranean countries to evaluate potential high-risk areas for TOSV infections. This would help prevent exposure of local residents and tourists to the virus. Moreover, the risk of transfusion-associated transmission of arboviruses in Italy and other European countries should be addressed. Because neither a vaccine nor specific antiviral drug treatment is available to prevent TOSV infection, local residents and travelers to TOSV endemic areas should be advised to take all precautions to prevent insect bites.

#### ACKNOWLEDGMENTS

We thank A. Giandomenico, A.M. Lo Bianco, O. Savino and M. Spadafora for their help with this case report.

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