

## BRIEF COMMUNICATION

### UNA VIRUS: FIRST REPORT OF HUMAN INFECTION IN ARGENTINA

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#### SUMMARY

Una virus (UNAV), Togaviridae family, is widely distributed in South America, where infections have been detected in mosquitoes and vertebrate hosts (humans, birds and horses). We analyzed human sera from Córdoba inhabitants aged 44 to 89 years and using a neutralization test, we found a prevalence of UNAV antibodies of 3.8% (3/79). The low titers detected suggest past infections probably acquired in rural areas of the Province of Córdoba (central Argentina). None sera were found positive for MAYV neutralizing antibodies. This is the first report of human infections by UNAV in Argentina.

**KEYWORDS:** Una virus; Togaviridae; Seroprevalence; Neutralizing Antibodies.

Una virus (UNAV), Togaviridae family, is a member of the Semliki Forest virus (SFV) complex, and a subtype of Mayaro virus (MAYV)<sup>4</sup>. UNAV was isolated for the first time from *Psorophora ferox* mosquitoes in the state of Pará, Brazil<sup>11</sup>. However, it is widely distributed in tropical and subtropical regions of Central and South America (Brazil, Colombia, French Guiana, Panama, Surinam, Trinidad, Venezuela) where it has a low seroprevalence<sup>4,10,12</sup>. Even though human infections by UNAV have been previously reported, they have not been associated with any specific type of disease<sup>4,8</sup>.

Currently, UNAV is the only member of the SFV complex with activity reported in Argentina<sup>8</sup>. In central Argentina, two strains of this virus (Cba An 979 and Cba An 995) have been isolated from febrile or dead equines at Río Segundo and Colonia Videla two villages located in the province of Córdoba<sup>3</sup>; and antibodies against UNAV were detected in birds and horses from other areas of this province<sup>8,9</sup>. Several strains of arbovirus (not UNAV) have been isolated from mosquitoes collected in different provinces of Argentina: Chaco, Corrientes, Río Negro and Santa Fe between 1977 and 1984<sup>6,7</sup>. Human sera from the provinces of Buenos Aires, Mendoza and Tucumán (Argentina) were also tested for UNAV antigens with negative results<sup>5</sup>.

The purpose of our study was to detect the presence of neutralizing antibodies for UNAV in human sera from Córdoba, a province located in the central area of Argentina.

#### MATERIALS AND METHODS

The Instituto Nacional de Previsión Social (PAMI) provided human sera from Córdoba citizens (males and females) aged 44 to 89 years. The specimens were obtained randomly between May and June, 2001. Afterwards, sera were inactivated at 56 °C during 30 min, centrifuged at 10 000 rpm for 30 min, and stored at -20 °C until assayed.

Seventy-nine samples of sera were tested by neutralization assay, estimating the sample with Epi Info software<sup>1</sup>. The plaque reduction neutralization test was performed with an 80% plaque reduction endpoint in Vero cell line under agar<sup>2</sup>.

The suspensions of Cba An 979 UNAV and Be Ar 20290 MAYV strains were prepared from a 10% dilution of infected suckling-mice brain in Minimum Essential Medium (MEM) with Earle's salts and L-glutamine, 10% fetal calf sera (FCS) and 1% antibiotics, centrifuged at 10 000 rpm for 30 min. A 1:5 dilution of each serum in MEM containing 2% FCS and 1% antibiotics was used for the screening procedure.

#### RESULTS

Three out of 79 sera analyzed were positive for UNAV neutralizing antibodies, representing a prevalence of 3.8% (Table 1).

**Table 1**  
Neutralizing antibodies (NT Ab) for UNAV (strain Cba An 979) detected in sera from inhabitants of Córdoba city (central Argentina).

Serum number	Donor age	NT Ab. titer
2	70	1/20
66	87	1/40
96	71	1/20

Two of these 3 infected subjects were interviewed and revealed a history of residency in rural areas of the province of Córdoba (Río Primero and Sobremonte), farming activities, and recent moving to the city of Córdoba. Unfortunately, the third infected person could not be interviewed.

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None sera were found positive for MAYV neutralizing antibodies (data not shown).

## DISCUSSION

Our results could indicate the circulation of UNAV, at least in rural areas of the province of Córdoba. This event could have happened years ago according to the low titers of neutralizing antibodies detected and the available information of viral isolation in the province<sup>3</sup>. It is important to remark that the towns of Río Segundo and Colonia Videla, where UNAV strains were first isolated from equines in the province of Córdoba, are towns located approximately 60 and 180 km southern from Río Primero and Sobremonte, respectively (Fig. 1). Therefore, our results suggest a larger area of distribution and circulation range of UNAV in Córdoba.



**Fig. 1** - Map of Córdoba Province (Argentina) showing the location of Río Primero (B) and Sobremonte (A) Departments where possibly 2 of the 3 infected persons by UNA virus acquired the infection here reported. At Río Segundo Department (C) 2 strains of UNA virus were previously isolated from equines.

This is the first report of human infection by UNAV in Argentina, demonstrating an enlargement of its southern limit of distribution. However, infections by related alphavirus belonging to SFV complex cannot be excluded in the exam of UNAV positive sera.

These preliminary data contribute to the knowledge of UNAV distribution in Argentina. It would be necessary to carry out more studies regarding human infection, associated symptoms and physiopathology, spatial and temporary patterns of virus activity, transmission cycle, vertebrate hosts involved, and vector incrimination.

## RESUMO

### Virus UNA: primeiro registro de infecção em humanos na República Argentina

O vírus Una (Togaviridae) tem ampla distribuição na América do Sul, detectando-se infecções até hoje em mosquitos e hospedeiros vertebrados (humanos, aves e cavalos).

Mediante a realização do teste de neutralização em soros humanos provenientes de indivíduos entre 44 e 89 anos, da cidade de Córdoba, foi detectada uma prevalência de 3,8% (3/79) de anticorpos para o vírus UNA. Nenhum soro apresentou anticorpos para o vírus Mayaro.

Os títulos foram baixos demonstrando-se a presença de infecção

passada. Dados epidemiológicos indicam que a infecção ocorreu em áreas rurais da província de Córdoba (centro da Argentina).

Os dados aqui expostos representam o primeiro registro de infecção de humanos por vírus Una na República Argentina.

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