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Clusters of Hantavirus Infection Cases in Southern Argentina

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Andes virus was identified in 1995 as the etiologic agent of Hantavirus Pulmonary Syndrome (HPS) in Southern Argentina. During the 1996 outbreak in this region there were epidemiological and molecular evidences of person to person transmission, never reported before for the hantavirus genus.

Objective: To identify clusters among Andes associated HPS and describe their characteristics.

Method: A cluster was defined as the association of a patient with confirmed HPS with one or more contacts who present evidences of acute hantavirus infection within 6 weeks from the onset of symptoms. We reviewed 47 cases from Río Negro and Neuquén provinces between 1993 and 2000. Hantavirus infection was confirmed in 45; the other two were fatal cases with clinical diagnosis of SPH without samples available for confirmation, linked with a close contact with confirmed infection: 1) a girl with positive IgG in a retrospective study of contacts of suspected SPH cases; in 1994 she was a breast-fed 7 month old baby when her mother died of adult respiratory distress (ARD) of unknown etiology; 2) A woman with confirmed SPH who became ill 15 days after her husband died of ARD of unknown etiology.

Results: We identified 7 clusters involving 30 patients (63.8%) during 1994 (epi 1), 1995 (epi 2), 1996 (epi 3 or 96´ outbreak), 1997 (epi 4), and 2000 (epis 5, 6 and 7). Five episodes fulfilled the strict cluster definition with confirmed acute infection in their all 26 members. The other two episodes (epi 1 and 4), corresponded to the special situations previously mentioned. Four episodes occured during fall and 3 in spring. The average age was 34.8 years (range 3 to 70) and 17 (57%) were female. Sixteen members were affected in the 96´ outbreak, 4 in the epi 2 and two in each of the remaining 5 clusters. The most frecuent type of contact was marital (6 couples), cohabitation with infected parents (6 children), and medical care assistance (3 cases); in all clusters except for the 96´outbreak, all members were household family contacts. In ´96 outbreak, cases presented one after the other, separeted by an averaged interval of 21.43 +/- 9.45 days; in epi 2, 4, 5, and 7 the average interval between cases was 21.86 days +/-3.08 (range 19-27); interval of epi 1 could not be established. Clinical presentation was HPS in all cases of 96´outbreak and in 11 cases of the other episodes; infection without pulmonary involvement was identified in three children: a) subclinical (epi 1); febril syndrome (epi 2) and febril syndrome with myalgias, nasal congestion, vomiting and cough (epi 6). Fatality rate of cases from clusters was 53.3% (16/30) in contrast to 11.8% (2/17) of sporadic cases; the rate for 96´ outbreak was 56% and 50% in the other 6 clusters; six of the 7 index cases (85.7%) died; mortality of

secondary cases was 43.5% in the 96´outbreak and 25% in the other clusters. In affected couples, the male preceded his wife in 5/6 episodes. Children < 16 years represented 20% (6/30) of total cases; all of them presented as secondary cases, preceded by their father (3), mother (2, both breast-feeding) or both parents (1). Rodent trapping performed in 9 peridomestic sites of 17 cases from Río Negro (epis 2, 3 and 5), showed infestation with rodents (all seronegative) in 3. Serologic studies of household contacts allowed the identification of 3 mild infections in children.

Serologic screening of 344 health care workers from El Bolsón, Bariloche and Neuquén hospitals gave negative results.

Conclusions: Clusters turned out to be a frecuent type of presentation of Andes virus infections in this study. Although the ´96 outbreak was exceptional, similar characteristics were found in the other clusters hereby analized: an index case with almost always fatal evolution, followed by one or more linked cases, two-four weeks after. Although exposure to rodents could not be excluded, these features suggest that interpersonal transmission may had happened in other ocassions. One possible explanation migh be that virus replication occurs at an unusually high level in a particular patient and that this could be responsible for the severity of the patient´s illness with a different shedding of the virus, resulting in a cluster of secondary cases. Direct contact, sexual contact and breast-feeding cannot be excluded as possible ways of transmission.