

Serological survey of antibodies to cytomegalovirus in the Santa Cruz region of Bolivia

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Summary

Cytomegalovirus (CMV) infection is known to be worldwide, and prevalent in developing countries (Krech & Tobin 1981). To our knowledge, no previous serologic studies of CMV infection have been reported from Bolivia. The present study was undertaken to determine the prevalence of CMV infection in the Santa Cruz region, south-eastern Bolivia.

Introduction

Serum samples were collected between November and December 1987 from 446 subjects (139 males and 307 females) in three localities: Camiri, a city with a population of approximately 25 000 including a large, privileged group of employees of the local petroleum agency and their dependents; Boyuibe, a poor town of about 2500 inhabitants south of Camiri; and Javillo, a small community of about 100 Guarani Indians isolated in the jungle north-east of Camiri. The study group principally consisted of elementary and middle-school students, hospital personnel and patients, and almost the entire population of Javillo.

Materials and methods

Ten ml blood samples were taken from each subject; the sera were stored at -20°C , transported to Italy in dry ice, and then tested by ELISA (Vironostika Anti-CMV, Organon Teknika, Boxtel, Holland). Chi-squared (with

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Yates's correction for small numbers) and Fisher's exact tests were performed to evaluate the significance of differences observed.

Results

The results are shown in Table 1. Of the 446 serum samples tested, 397 (89%) contained antibody to CMV. Females had a higher prevalence of antibody to CMV (90.9%) than males (84.9%) but this did not reach statistical significance ($0.05 < P < 0.1$). There were no statistically significant differences between the prevalence observed in the three localities studied ($P > 0.1$). The universal exposure to CMV at an early age is evident from the high percentage (69.6%) of seropositive children in the 1-5 years age group. The prevalence increased gradually with increasing age reaching 100% in the over 40-year-old group.

The high prevalence of antibodies to CMV encountered in this area of Bolivia agrees with the data from other developing countries (Krech & Tobin 1981). Factors responsible for the early and widespread acquisition of antibodies to CMV among the population of this area are probably the intensity and promiscuity of interpersonal contact rather than the socio-economic conditions *per se* (Lang *et al.* 1977). The chance of an infant being in contact with a CMV excretor is high in communities where many different adults and children have the care of babies or toddlers, and where the level of personal hygiene is poor (Lang *et al.* 1977). Moreover, the wide practice of breast feeding in a population where the rate of maternal sero-

Table 1. Prevalence of cytomegalovirus antibodies in the region of Santa Cruz by age, sex and locality

Age (years)	Male		Female		Total	
	No. tested	No. positive (%)	No. tested	No. positive (%)	No. tested	No. positive (%)
1-5	9	6 (66.7)	14	10 (71.4)	23	16 (69.6)
6-10	31	21 (67.7)	55	43 (78.2)	86	61 (71.4)
11-20	66	60 (90.9)	153	143 (93.5)	219	203 (92.7)
21-40	24	22 (91.7)	67	65 (97.0)	91	87 (95.6)
>40	9	9 (100)	18	18 (100)	27	27 (100)
Locality						
Camiri	28	21 (75.0)	151	136 (90.1)	179	157 (87.7)
Boyuibe	74	65 (87.8)	109	102 (93.6)	183	167 (91.3)
Javillo	37	32 (86.5)	47	41 (87.2)	84	73 (86.9)
Total	139	118 (84.9)	307	279 (90.9)	446	397 (89.0)

positivity is high, is likely to represent an important mode of transmission to young children. Cytomegalovirus acquired from maternal milk has not been associated with illness, but perinatal CMV infection results in chronic viral shedding (Pass & Hutto 1986). No data are available on the incidence of congenital CMV infection, but the universally early exposure to the virus makes the possibility of primary intrauterine infection rare.

References

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