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## Low prevalence of circulating anti-type 6 human herpes virus IgG-antibodies in Spanish children

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*Key words:* human herpes virus type 6, antibody, prevalence, IgG

### Abstract

The prevalence of circulating anti-HHV-6 IgG-antibodies in an infant population, was investigated to assess the evolution of antibody titres from birth to adulthood. End-point titration was done by indirect immunofluorescence, in 525 samples of serum from children, healthy adults and pregnant women. In the children, seropositivity increased from the age of 6 months, and was highest (56.52%) between 7 months and 1 year, suggesting that the initial infection occurred between 6 and 12 months of age.

### Introduction

Salahuddin *et al.* (1986) described the type 6 human herpes virus (HHV-6), and since then many studies have analysed its molecular structure, pathogenesis, epidemiological characteristics, and the diagnosis of infection. The virus, now known to be ubiquitous and to affect a large part of the world's population, is regarded as the agent responsible for sudden exanthema in newborns. In the acute phase of the disease, acute hepatitis and mononuclear syndrome, among other syndromes, can occur. Infection by HHV-6 is also associated with chronic aesthenia and lymphoproliferative syndromes.

In the present work we studied the prevalence of circulating anti-HHV-6 IgG-antibodies in an infant population to assess the evolution of antibody titres from birth to adulthood in Granada (Spain).

### Material and methods

IgG antibody to HHV-6 was determined by an indirect immunofluorescent-antibody assay which used twofold dilutions (starting at 1:40) of serum and HSB-2 cells infected with an HHV-6 isolate containing both the HHV-6A and HHV-6B genomes (Hall *et al.*, 1994). In 525 samples of serum 271 were from healthy children (group 1), 154 samples were from healthy adults aged 30 to 50 years (77 men, 77 women; group 2), and 100 samples were from healthy pregnant women aged 20 to 30 years (group 3). Informed consent to take part in the investigation was obtained for each participant.

**Table 1** Distribution of titres according to groups and sex

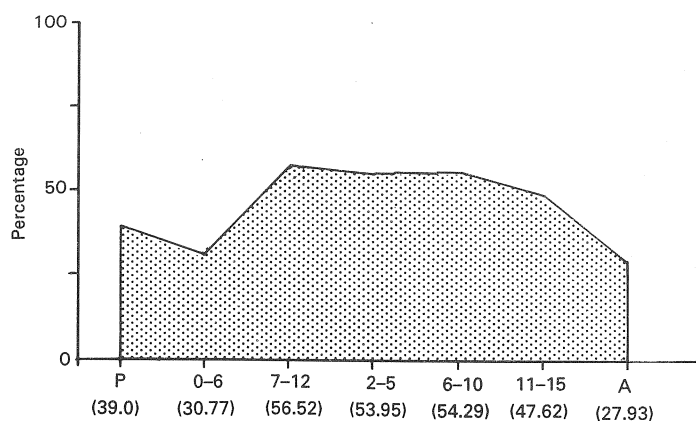
Age	Sex	1/40:		1/80:		1/160:		1/320:		1/640:	
		n	%	n	%	n	%	n	%	n	%
0-6 m	M	0	0.0	0	0.0	0	0.0	2	14.28	1	7.14
	F	4	16.0	2	8.0	0	0.0	2	8.0	1	4.0
7 m-1 y	M	1	6.25	2	12.5	4	25.0	2	12.5	0	0.0
	F	3	42.86	0	0.0	0	0.0	0	0.0	1	14.28
2-5 y	M	9	18.37	7	14.29	2	4.07	8	16.33	0	0.0
	F	3	11.11	1	3.7	5	18.53	6	22.22	0	0.0
6-10 y	M	10	29.41	6	17.65	3	8.82	1	2.94	2	5.88
	F	6	16.67	4	11.11	2	5.55	3	8.33	1	2.78
11-15 y	M	3	9.37	2	6.25	5	15.62	2	6.25	1	3.23
	F	2	6.45	7	22.58	5	16.13	2	6.45	1	2.78
Adults*	M	9	11.69	1	1.3	1	1.3	0	0.0	2	2.6
	F	20	25.96	4	5.19	2	2.6	0	0.0	4	5.19
Pregnant	F	20	20.0	14	14.0	2	2.0	2	2.0	1	1.0

\* $p < 0.05$  for results by  $\chi^2$  test; and all the other results were  $p < 0.01$ .  
M, male; F, female; m, month; y, year; n, number.

### Results and discussion

The overall prevalence of circulating anti-HHV-6 antibodies in group 1 was 49.45%, distributed according to age subgroups as shown in Table 1. The corresponding value in group 2 was 27.92%, with a higher prevalence of seropositivity in women than in men ( $p < 0.05$ ;  $\chi^2$ ). In group 3, 39% of the population was seropositive. When antibody titres between groups, age and sex were compared, the only statistically significant difference was that between group 1 and each of the other two groups ( $p < 0.001$ ;  $\chi^2$ ) (Table 1 and Figure 1).

In the USA, Japan and Europe, the percentage of individuals with HHV-6 infection ranged from 60% to 90% of the population; the mean for Spain was 35% (Robert *et al.*, 1990; Levy *et al.*, 1990; Okuno *et al.*, 1991; Lozano de León *et al.*, 1992; Civeira *et al.*, 1989). This



**Figure 1** Variation of seroprevalence to HHV-6 according to age. P, pregnant; 0-6, and 7-12 in months, remainder in years; A, adult; average % shown in parentheses.

percentage varied with age and socio-economic conditions (Briggs *et al.*, 1988). The seroprevalence of anti-HHV-6 antibodies in the present work is lower than previously reported results, possibly because of geographical differences and the use of different initial dilutions of the sample. In our study population, the seropositivity was higher among women than among men, which was a finding also noted by Briggs *et al.* (1988).

In group 1 (children) the seropositivity increased from the age of 6 months, and was highest (56.52%) between 7 months and 1 year. Knowles and Gardner (1988) has described similar results. The prevalence remained close to 50% until adolescence, suggesting that the initial infection occurred between 6 and 12 months of age. This observation has also been reported by Okuno *et al.* (1989) although the rate of seroprevalence in their work was higher (83% for children aged 6 months).

It is suggested that an initial HHV-6 virus infection should be ruled out in children between 7 months and 1 year of age in whom a febrile syndrome is suspected.

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