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Non-Relationship between the HLA System and the Senile form of Alzheimer's Disease

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Summary. The 21 HLA-A and -B antigens were typed in 38 patients with the senile form of Alzheimer's disease and 301 healthy individuals. No statistically significant difference was found in the frequency of HLA antigens after correction of *P*.

Key words: HLA system – Alzheimer's disease

Introduction

The relationship between the HLA system and Alzheimer's disease has been dealt with by many authors, with negative results (Whalley et al. 1980) or the demonstration of a significant correlation only before correction of *P* (Henschke et al. 1978 to HLA-Cw3; Renvoize et al. 1979 to HLA-B15 and HLA-Cw3; Sulkava et al. 1980 to HLA-Cwl and HLA-Cw5). A significant association to HLA-B7 and HLA-Cw3 antigens has only been reported by Walford (1980). Wilcox et al. (1980) found a more frequent incidence of HLA-A2 antigen in patients up to 60 years of age.

The present communication summarizes the results of typing HLA antigens in patients with the senile form of Alzheimer's disesase.

Methods

A total of 21 HLA-A and -B antigens were typed in 38 patients with the senile form of Alzheimer's disease (patients over 64 years; 36 females, 2 males). There were 2 patients up to age 70 years, 20 between 71 and 80 years, and 16 over 80 years of age. The diagnosis was made in accordance with clinical criteria of Haschinsky et al. (1975), i.e. the rating of scores lower than 7. CT scans were not available. Clinically, 29 patients showed the simple form, 6 patients the paranoid hallucinatory form and 3 patients (2 of whom were male) the mixed form. The

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Table 1. HLA frequency in senile type of Alzheimer's disease

HLA antigens	Alzheimer's disease ($n=38$) %	Controls ($n=301$) %
A1	18.42	28.24
A2	68.42	48.51
A3	15.79	25.25
A9	26.32	19.24
A10	13.16	15.28
A11	15.79	9.63
A28	2.63	4.32
B5	13.16	15.28
B7	31.58	26.91
B8	15.79	16.94
B12	28.95	26.25
B13	5.26	8.98
B14	5.26	5.98
B15	15.79	13.29
B17	5.26	8.64
B18	13.16	4.65
B27	2.63	6.64
B40	2.63	7.64
Bw21	0.00	4.65
Bw22	2.63	2.66
Bw35	10.53	14.28

number of patients with the mixed form is low because rating of the score for so-called multi-infarct dementia was done according to Haschinsky et al. (1975).

As to the duration of the disease, 4 patients survived 1 year, 5 between 1 and 2 years, 13 between 2 and 3 years, 2 between 3 and 4 years, 10 between 4 and 5 years and 4 patients survived over 5 years. Most patients were in the terminal stage, and at present only 10 patients are alive. One female had a mild form of organic psychosyndrome, 5 had a medium and 32 patients had a severe form of this psychosyndrome.

A control group of 301 healthy individuals (blood donors), aged between 20 and 50 years, was also examined using the two-stage NIH-microlymphocytotoxic test. Statistical evaluation was performed using the χ^2-test with Yates' correction and the direct Fisher's test.

Results

The difference in the frequency of HLA-A2 antigens (χ^2-Yates$=4.59$, $P=0.04$, $P_c=0.84$; Fisher's test: $P=0.009$, $2P=0.018$, $2P_c=0.378$) and HLA-B18 antigens (χ^2-Yates$=4.62$, $P=0.04$, $P_c=0.84$) was statistically significant, however only before correction of P by multiplication by 21 (=number of typed HLA antigens). There were no substantial differences between the frequencies of HLA-B15 and -B7. Antigens of the HLA-C locus were not examined (Table 1).

Discussion

Our results confirm the conclusions of most authors that there is no significant relationship between HLA and Alzheimer's disease. The age of our patients ranged from 64 to 89 years, thus they all exhibited the senile form of Alzheimer's disease. In this patient group we found a more frequent incidence of HLA-A2. It is interesting that Wilcox et al. (1980) also found a higher frequency of HLA-A2, though in another age group, i.e. under 60 years.

The differences in the results obtained may be due to the fact that the individual authors have examined differing groups of patients. It may be that the authors used different diagnostic criteria and examined different patients, that the series were heterogeneous, that the nosology was doubtful, or that there is indeed no relationship. Further studies should allow for these possibilities.

References

Haschinsky VC, Ilif LD, Zilhka E (1975) Cerebral blood flow in dementia. Arch Neurol 32 : 632

Henschke PJ, Bell DA, Cape RDT (1978) Alzheimer's disease and HLA. Tissue Antigens 12 : 132

Renvoize EB, Hambling MH, Pepper MD, Rajah SM (1979) Possible associations of Alzheimer's disease with HLA-Bw15 and cytomegalovirus infection. Lancet I : 1238

Sulkava R, Koskimies S, Wikström J, Palo J (1980) HLA antigens in Alzheimer's disease. Tissue Antigens 16 : 191

Walford RL (1980) Immunology and aging. Am J Clin Pathol 74 : 247

Whalley L, Urbaniak SJ, Darg C (1980) Histocompatibility antigens and antibodies to viral and other antigens in Alzheimer's presenile dementia. Acta Psychiatr Scand 61 : 1

Wilcox CB, Caspary EA, Behan PO (1980) Histocompatibility antigens in Alzheimer's disease. A preliminary study. Eur Neurol 19 : 262

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