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Anti-CNS Antibody Activity in Down's Syndrome

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By the 4th decade of life Down's syndrome (DS) individuals develop neuropathologic features of Alzheimer's disease. To test the hypothesis that circulating anti-central nervous system (CNS) antibody activity may play a role in the development of Alzheimer's disease in DS a population study was undertaken. Serum samples were obtained from 24 DS and normal, age and sex matched pairs. The serum samples were screened against SDS polyacrylamide gel electrophoretic blots (Western blots) of normal, autopsy-derived human CNS tissue. Immunoglobulin binding was revealed using HRP-conjugated rabbit anti-human IgG. The age spectrum of the DS individuals was 31 to 65, and normals 32 to 66 years. There were 11 male and 13 female pairs.

When tested against blots of frontal cortex, there was no significant difference between DS and normals in: (1) the incidence of immunoreactive banding (32% in both groups); (2) the incidence of banding against high, mid and low molecular weight CNS polypeptides; (3) the number of reactive bands. With aging there was no significant difference in the incidence of banding by decade of age or by sex in DS and normals. Significantly, there was no correlation with anti-CNS antibody activity in those DS individuals with circulating anti-microsomal and anti-thyroglobulin antibodies (3 cases) or with demonstrable intellectual deterioration (5 cases). Similar results were obtained when the serum samples were screened against Western blots of cerebellum and central white matter.

These results suggest that circulating anti-CNS antibodies are not associated with the development of Alzheimer's disease in DS individuals. The authors would like to acknowledge the technical assistance of B. Kawasoe. This work was supported in part by the Physicians' Services Inc. Foundation.