

Alzheimer's disease and anticardiolipin antibodies

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Abstract

Aim: The objective of this study was to assess the association between Alzheimer's disease and elevated levels of anticardiolipin antibodies. **Design and Setting:** Prospective study, the levels of anticardiolipin antibodies from Alzheimer's disease was evaluated in Neurogeriatric Ambulatory in Hospital de Base-São Jose do Rio Preto. **Patients and Method:** Thirty-one patients suffering from Alzheimer's disease was evaluated. Twenty-three of the patients were female and eight male with ages ranging from 62 to 79 years old and a mean of 71.2 years. The NINCDS-ADRDA criteria were used to assess the Alzheimer's disease. The control group was made up of 25 female and 9 male participants of a senior citizen group with ages, which varied from 62 to 80 years old. with an average of 68 years. Evaluation of the anticardiolipin antibodies was performed by means of Enzyme-Linked Immunoabsorbent Assay (ELISA) for quantitative measurement of IgG and IgM antibodies against cardiolipins in serum. Statistical analysis was made using the Fisher's exact test, p-value < 0.05. **Results:** Elevated aCL levels were observed in 9 (29%) of the 31 Alzheimer's disease patients. In the control group, 9 (26.4%) of the 34 presented with elevated levels of aCL giving a p-value of 0.58. **Conclusions:** This study did not evidence an association between Alzheimer's Disease and elevated levels of aCL.

Keywords: Alzheimer Disease, Anticardiolipin Antibodies, Association

Introduction

Antiphospholipid antibodies (aPL) are a heterogeneous group of circulating autoantibodies against anionic phospholipids [1-3]. The clinical symptoms of venous and arterial thrombosis and recurrent miscarriages are caused by aPL including anticardiolipin antibodies (aCL) and lupus anticoagulant (LA).[1-4] They present variable clinical symptoms affecting all vessels both great to small, veins and arteries alike, causing myocardial infarction, superficial thrombophlebitis and arterial thrombosis of the retina amongst other diseases [4-6]. Cerebral ischemia associated with aPL is the most common arterial thrombotic manifestation [7]. A variety of non-thrombotic neurological disorders have also been associated with aPL. The increasing prevalence of aPL, dementia and stroke with age complicates the study of a causal relationship between antiphospholipid syndrome (APS) and dementia [8].

One of the most probable hypotheses is the co-existence of Alzheimer's disease and microvascular white matter disease. Additionally, aPL antibodies might predispose the individual to the presence of vascular dementia.

The contribution of animal models to our understanding of the manifestations of APS is stressed, especially regarding the cognitive and behavioral aspects for which we have established model systems with the mouse. These mice develop hyperactive behavior after a period of four months, as well as deficits in learning and memory, and are potentially valuable as a system in which to study the pathogenesis and treatment of cognitive and behavioral aspects of APS [9]. Findings indicate that APS-associated vascular dementia is accompanied by a cortical neuronal loss, presumably caused by a disease of small-vessels with immune-mediated intravascular thrombosis [10].

The objective of this study was to assess the association between Alzheimer's disease and elevated levels of anticardiolipin antibodies.

Methods

A total of 31 patients with Alzheimer's disease were evaluated in a prospective study for elevated levels of aCL. Twenty-three of the patients were female and eight male with ages ranging from 62 to 79 years old (mean 71.2 years). The patients who were treated in the neuro-geriatric outpatients' clinic were diagnosed as with Alzheimer's disease by means of clinical records, physical examination, neuropsychological assessment, laboratorial examinations and by neuro-imaging. The criteria of the 'National Institute of Neurological and Communicative Disorders and Stroke' and 'Alzheimer's Disease and Related Disorders Association' (NINCDS-ADRDA) [11] were used to diagnose the disease. A control group formed by 25 female and 9 male participants of a senior citizen support group had ages varying from 62 to 80 years (mean 68 years old). Thus, the genders and ages were statistically similar in both of the groups.

Measurement of the aCL was performed by means of Enzyme-Linked Immunoabsorbent Assay (ELISA) for quantitative measurement of IgG and IgM antibodies against cardiolipins in serum. Statistical analysis was made using the Fisher's exact test with a confidence interval of 95%.

Results

Elevated aCL levels were observed in 9 (29%) of the 31 Alzheimer's disease patients. In the control group, 9 (26.4%) of the 34 presented with elevated levels of aCL giving a p-value of 0.58.

Discussion

This investigation evaluated elevated aCL levels in patients suffering from Alzheimer's Disease and no association was evidenced. However, despite few published studies, one investigation reported five patients with elevated aCL levels out of a total of 87 consecutive compared to none out of 69 controls group, had significantly elevated aPL. All the five suffered from Alzheimer's disease, though one had the mixed form [12]. This study did not agree with our results, however, both studies assessed a small number of individuals. Nevertheless, this suggests that new studies with a greater number of patients are important. Another investigation detected that the presence of cognitive deficiencies in asymptomatic patients with high levels of aPL indicating a pre-clinical phase of the neurological involvement and therefore it is one of the most sensitive markers of the syndrome [13]. Another study shows an increased incidence of LA and elevated levels of aCL in neuroleptic-treated psychotic patients thus there is a

possible association between psychosis and aPL [14]. These cognitive deficit alterations detected in studies, without evidence of thrombotic incidents, suggests a different form of involvement of the antibodies in the probable etiopathogenic mechanism of this dementia.

Conclusions

This study did not evidence an association between Alzheimer's Disease and elevated levels of aCL as opposed to the findings in another study

Competing interests

The authors declare that they have no competing interests (political, personal, religious, ideological, academic, intellectual, commercial or any other) in relation to this manuscript.

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