

ASSESSMENT OF THE DIAGNOSTIC UTILITY OF VEP CHANGES IN ALZHEIMER'S DISEASE

Kerry Coburn*, Mercer University School of Medicine, Macon, GA, USA; James Arruda, R. Toby Amoss, Mercer University College of Liberal Arts, Macon, GA, USA.
Contact e-mail: coburn_kl@mercer.edu

Background: Previous studies consistently have found that the flash P1 and pattern reversal P100 VEP components from the sparsely cholinergic primary visual cortex are normal in Alzheimer's disease (AD) groups compared to groups of age equivalent controls, while the flash P2 component from the richly cholinergic visual association cortex is selectively delayed. The selective flash P2 delay is not found in other forms of dementia, but in AD groups and individual patients it increases over time, paralleling dementia severity. The consistency of such findings across laboratories and techniques raises an important question of diagnostic utility: To what extent is a selectively delayed flash P2 pathognomonic of AD in individual patients? Several authors have termed the selective P2 delay a "marker" for AD and have called for its use in clinical diagnosis, *Objective:* This study critically examined the diagnostic utility of the selective P2 delay. *Methods:* Using clinical diagnosis on the basis of the McKhann criteria as a "gold standard" the diagnostic utility of P2 was assessed by calculating sensitivity and specificity for a range of possible cutoff scores on blind data collected from 45 AD patients and 60 elderly controls. Several recording reference systems and simplified nontopographic methods of component identification were used in order to approximate the data analysis capabilities of most clinical EEG laboratories. *Results:* As in previous studies, there were highly significant P2 delays in the AD group compared to the control group, whether measured from the P1 ($P = 0.03'$) or the P 100 ($p = 0.005$). However, the diagnostic accuracy of the P2 delay for individual patients and controls was 70% or less, regardless of the reference system used. *Conclusions:* Although there are highly significant between-group differences, the diagnostic accuracy of the selective P2 delay is too low to add meaningful information to the McKhann diagnostic process.

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