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Comparison of cholinergic status with quantitative EEG in healthy subjects and patients suspected of dementia

Rolf G Ekedahl
NeuFydi, Sweden

Background/Aims: To evaluate quantitative electroencephalography (qEEG) variables to distinguish healthy subjects from patients who investigated for dementia and, assess at follow-up if acetylcholinesterase inhibitor (AChEI) treatment influenced the qEEG.

Methods: Average from four EEG epochs obtained with eyes closed (E.Cl.) and eyes open (E.O.), the peak frequency with eyes closed and the Vigilance-index (ratio of E.O./E.Cl. power) calculated. A healthy group and a group suspected of having primary dementia compared, and the suspected dementia group followed for 12 months with or without AChEI treatment. The statistical analyze compared the healthy individuals to the suspected dementia patients, and at follow-up of AChEI treated to non-treated.

Results: Comparison between healthy with suspected dementia group at baseline, all variables were significantly altered except E.Cl average power. The Vigilance-index (p-value 9.3×10^{-8} ***) and average power of E.O. (p-value 0.0007 ***) increased, and the mean peak- frequency (p-value 2.7×10^{-10} ***) decreased. At the follow-up for the suspected

dementia group, the Vigilance-index of the untreated increased significantly (p-value 0.00082 ***) but not for the AChEI treated group. The AChEI treated group had a higher average Vigilance-index 0.6 and lower average MMSE score than the untreated group. Csf showed a paradoxically higher number of patients with pathological Amyloid β^{42} , total-Tau, and phospho-Tau for the untreated compared to the treated group.

Conclusion: The Vigilance-index may be used to assess cholinergic deficits in patients with dementia also early in the course of the disease and evaluate the effects of AChEI treatment.

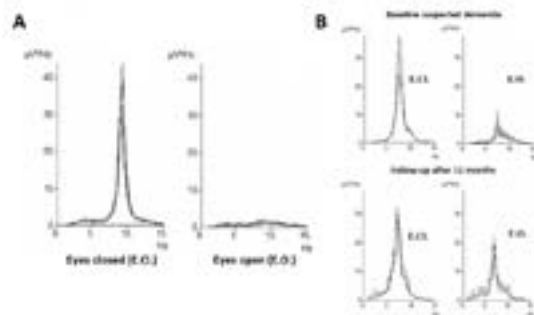


Fig. 1: Quantitative EEG-analysis for a healthy person and a suspected dementia patient at baseline and follow-up.

Biography

Rolf G. Ekedahl completed his PhD in 1996 at Karolinska Institute, Huddinge hospital. Since then he is the Director of research and development organization NeuFydi. He has published 14 papers in reputed journals and acknowledged as a peer-reviewer for Journal of Clinical Neurophysiology.

rolf.ekedahl@neufydi.com

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