INHIBITORY CONTROL OF SACCADIC EYE MOVEMENTS AS A POTENTIAL DIAGNOSTIC MARKER FOR ALZHEIMER’S DISEASE

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This study explored the relationship between cognitive function and saccadic eye movements and distinguished between age-specific and disease-specific effects on the inhibitory control of saccadic eye movements.

The experimental population comprised 25 patients with Parkinson’s disease (PD, mean age = 62.8yrs), 17 Alzheimer’s disease (AD, mean age = 76.9yrs), 32 elderly controls (EC, mean age =70.5yrs). The prosaccade eye test: At the beginning of each trial participants were instructed to direct their gaze, as quickly and as accurately as possible, to a new target displayed randomly either on the right or left. The antisaccade eye test: The target conditions of the anti-saccade paradigm were identical to the pro-saccade test described above. However, here participants were instructed to 'look' in the opposite direction from the peripheral stimulus.

Examination of prosaccades revealed that AD patients’ antisaccades were significantly impaired compared to those of the PD, YC and EC groups. Inhibitory errors for the AD group on the antisaccade task were significantly higher than those of the PD, EC and YC groups. However, in contrast to the AD, PD patients were able to correct their inhibition errors.

The principle abnormality in AD was a striking increase in inhibitory errors, together with a marked reduction in corrective eye movements after the eye had moved inadvertently towards the target. The AD patients revealed a 10-fold increase in the proportion of anti uncorrected errors in comparison to healthy participants and patients with PD. Assessment of eye movements should be more widely incorporated into routine tests for dementia.