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The effect of physiological ageing on Minimally Delayed Oculomotor Response (MDOR) task performance

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Statement of the Problem: The minimally delayed oculomotor response (MDOR) task provides a means of measuring behavioural inhibitory control (BIC). Physiological ageing has been suggested cause a decline in inhibition affecting cognition and BIC. The aim of this study was to investigate the effects of ageing on MDOR task performance in healthy adults.

Methodology: Healthy participants aged >50 years were recruited and screened with the Addenbrooke's Cognitive Examination (ACE III). Participants completed 2x120 MDOR and 1x32 calibration trials, and saccade latency and amplitude were measured. In the MDOR task participants were instructed to respond to target offset, not target onset. In the calibration task participants made simple prosaccade responses to targets. MDOR performance (latencies of correct responses and error rates) in healthy elderly adults was compared with pre-existing data from younger participants.

Findings: Young group (N=56, mean age: 22±2 years, range: 19yrs-27yrs) and old group (N=22, mean age 62±7yrs, range 50-72yrs, mean ACE III score: 96±3) MDOR saccade latencies were much longer than longer than calibration latencies. Latency and error in the old group were significantly increased relative to the young group. Latency and error rate were significantly increased in the old group (repeated measures ANOVA, group treated as a between subjects factor; latency $F_{1, 76}=95$, $p<0.001$; error rate $F_{1, 76}=228$, $p<0.001$). When latencies from the calibration task were used to correct MDOR latencies in young and old groups, the group difference for latency was abolished. The distribution of error timing strongly supported the hypothesis that errors were inhibition failures.

Conclusion & Significance: While in normal ageing latency increases in the MDOR task, this is a feature of general age-related slowing. However, the raised MDOR error rate confirms the presence of an inhibition deficit in the healthy elderly population.

Biography

Nikitha Pasunuru is an intercalating medical student at the University of Liverpool, undertaking the Master of Research Programme in Clinical Sciences.

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