

Objectives: Cognitive impairment is a growing problem with increasing burden in ageing global population. Older adults with major depressive disorder (MDD) have higher risk of dementia during ageing. Neurofilament light chain (NfL) has been proven as a potential biomarker related to dementia. The present study aims to assess the cognitive deficits in older adults with MDD and investigate their association with peripheral blood levels of NfL.

Design: We enrolled 39 individuals with MDD and 15 individuals with mild neurocognitive disorder or major neurocognitive disorder, Alzheimer's type. Both groups were over age 65 and with restricted Mini-Mental State Examination (MMSE) score. Demographic data, clinical variables, and plasma NfL levels were obtained. We used cluster analysis according to their cognitive profile and estimated the correlation between plasma NfL levels and cognitive impairment in each domain.

Result: In the MDD group, participants have higher rate of family psychiatry history and higher rate of current alcohol use habit compared with patients with neurocognitive disorders. In the neurocognitive disorders group, participants showed significantly lower score in total MMSE and higher plasma NfL levels. Part of the MDD patients presented cognitive deficits similar to that of neurocognitive disorders (cluster A). In cluster A, the total MMSE score ($r=-0.58277$, $p=0.0287$) and the comprehension domain ($r=-0.71717$, $p=0.0039$) were negatively correlated to NfL levels after adjusting for age, while the associations had not been observed in the other cluster.

Conclusion: We noted the negative correlation between NfL levels and cognitive performance in MDD patients whose cognitive manifestation were more similar to that of degenerative neurocognitive disorders. NfL might be a potential marker to predict patients with MDD to develop cognitive decline especially in domains typically found in Alzheimer's disease. Further longitudinal studies are required to validate our findings for clinical implications.

P203: The temporal relationship between dementia and serious traffic accidents: a cohort study of linked national databases.

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Objective: The traffic issues have been attracting global attention due to increased occurrence and higher mortality rate in the older population. Many countries have employed different kinds of regulations on the elder drivers depending either on their age or whether being demented. These policy differences left a research gap to identify the temporal relationship between serious traffic accidents (STA) and dementias, which can inform the most appropriate time for policymaking. In the present study, we linked two national databases and performed analyses to explore this problem.

Methods: With the grant and supports from the government, the research team combined the databases of STA registries and the whole population dataset of National Health Insurance Research Database to form a 10-year retrospective cohort for analyses. We performed both retrospective and prospective directions to explore the time length between STAs and the diagnoses of dementia depending on the selection of the STA occurrences and dementia diagnoses as outcomes. In addition to descriptive statistical analyses, we also performed inferential statistics to analyse the variables between different types of STAs. A p-value less than 0.05 was set as statistically significant

Results: 437516 persons involved in STAs were enrolled for analyses and the mean age was 61.47 years (SD=8.90) with sex ratio (F/M) of 0.62. We divided the samples into three groups: (1) STAs without dementias (95.17%) (2) dementias after STAs (3.40%), and (3) dementias before STAs (1.43%). The mean age of the 3rd group (73.80 years, SD=8.79) was significantly older than the rest two. When comparing these three groups, a preceded dementia diagnosis was a significant risk factor for repeated STAs. (OR: 1.205, 95% CI: 1.100-1.320, $p<0.001$) Finally, an average length of 2.35 years (SD: 1.60) was found for those who was diagnosed of dementias before the first STA while 2.57 years (SD: 1.69) was noted for the diagnosis of dementia after first STA.

Conclusion: In our study, dementia was identified as a significant risk factor for STAs. We further asserted that 2.5 years would be an appropriate time length for the authorities to examine the traffic risks of those who were diagnosed of dementias.

P204: Heart rate variability in patients with dementia or neurocognitive disorders: A systematic review and meta-analysis

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Objective: Heart rate variability (HRV), a quantitative measure of mainly parasympathetic activity, has been applied in evaluating many types of psychiatric and neurological disorders, including dementia (or neurocognitive disorders). However, although dementia patients often showed significantly lower HRV (various indices) than healthy controls, and different types of dementia had distinct HRV features, the results were not identical across studies. We designed a systematic review and meta-analysis for incorporating data from different studies.

Methods: We gathered studies comparing HRV in patients with dementia and in healthy controls. HRV was analysed in several ways: parasympathetic function in hierarchical order (main analysis); total variability; comparison of HRV between different subtypes of dementia; specific indices of HRV; HRV reactivity.

Results: In initial search, we found 3425 relevant articles; 24 studies with a total of 1107 dementia patients and 1017 control participants finally entered the meta-analysis. The dementia patients had a significantly lower resting HRV for parasympathetic function (Hedges' $g=-0.3596$, $p=0.0002$) and total variability (Hedges' $g=-0.3059$, $p=0.0002$) than the controls. For diagnostic subgroup analysis relative to the controls, HRV was significantly lower in mild cognitive impairment (MCI) patients (Hedges' $g=-0.3060$) and in patients with dementia with Lewy bodies (DLB) (Hedges' $g=-1.4154$, $p<0.0001$). Relative to patients with Alzheimer's disease, HRV in patients with DLB was significantly lower (Hedges' $g=-1.5465$, $p=0.0381$). Meta-regression revealed that gender proportion was significantly associated with effect size.

Conclusion: Our results support that dementia (especially DLB and MCI) patients to have lower parasympathetic activity than health people. The influence of gender on the results should be carefully interpreted.