

Category : Health and Allied Sciences

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### GENETIC AND BIO-CHEMICAL DETERMINANTS OF DEMENTIA

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As the neurodegenerative disease (NDD), dementia, is emerging as a silent epidemic for rapidly developing countries like Malaysia, locally investigation of its prevalence including genetic, biochemical and behavioural determinants were the focussed objective of this study. For clinical epidemiological investigation of dementia, the commonest NND, an initial descriptive study to assess the magnitude of dementia followed by a case-control study were conducted in collaboration with other higher educational institutions both overseas and in Malaysia. This study revealed many facts locally unexplored previously. Data were collected from a statistical sound sample size (197 study subjects initially for the descriptive phase; 63 dementia cases and 103 age matched controls for analytic phase) using a questionnaire for personal profile and other related factors. The standard protocols were followed to measure the selected biochemical determinants such as adiponectin, glucose levels, lipid profile and alleles of apolipoprotein E gene (APOE). The statistical analyses were performed using standard statistical software, the SPSS (Statistical Package for the Social Sciences) for Windows, Version 17. In addition to descriptive statistics, pertinent inferential statistical analyses were performed. It appears from the initial descriptive study that dementia was the leading diseases (72.1%) of the identified neurodegenerative diseases among study subjects. In investigation of genetic determinant, as in other areas of inquiry, one-fifth (19.7%) of the identified cases revealed the positive family history reflecting the putative role for inherited susceptibility. About one-third of them were smokers (29.4%). Among the known co-morbidities, type 2 diabetes mellitus, hyperlipidemia and hypertension were remarkable (43.7%, 11.3% and 65.5% respectively). The evident of high percentages of patients were suffering from different co-morbidities in combinations suggested the potential scope for further investigations of selected biochemical and genetic determinants such as, serum adiponectin level, lipid profile and glycaemic status and alleles (ApoE-ε2 Apo ApoE-ε3 and E-ε4) of APOE to explore the respective etiological role. ApoE-ε4 was statistically significantly associated with dementia ( $\chi^2(df = 1) = 10.8, p < 0.01$ ) and might be an important determinant for the dementia cases. The proportion of dementia cases among neurodegenerative diseases in this study was alarmingly high. Type 2 diabetes mellitus was the most common co-morbidity and ApoE-ε4 appears to be a genetic determinant of dementia.

**Keywords :** Genetic, bio-chemical, behavioural, determinants, neurodegenerative, disease, Malaysia