A new approach to studying prevalence and incidence of cognitive decline and dementia in older adults with Down Syndrome.

Johnny Sei-Hoe Hon

The Summary

Background: Alzheimer-like age-related neuropathological changes and dementia in adults with Down Syndrome (DS) have been extensively studied. The aim of this longitudinal study was to investigate the extent of clinical and psychological changes with age using established diagnostic and neuropsychological instruments in a population-based sample of older people with DS. The effects of various risk factors for Alzheimer's Disease (AD) which have been suggested for the general elderly population were also investigated. This is the first population-based study using established methods to assess cognitive impairments and dementia in the DS population. **Method:** Changes in memory and other cognitive functions, personality, general mental functioning and daily living skills were assessed using a modified version of the informant interview of the Cambridge Examination for Mental Disorders of the Elderly (CAMDEX) together with a number of well established neuropsychological batteries including the Cambridge Cognitive Examination (CAMCOG), Rivermead Behavioural Memory Test for Children (RBMT-C), Boston Naming Test (CERAD version), British Picture Vocabulary Scale, CERAD Drawing Test, CERAD Trail-Making Test, Severe Impairment Battery (SIB) and Oliver's Memory and Language Tests. Where possible, blood samples, background information and family history were also collected for use in studying the effects of various potential risk factors. **Results:** Age-related prevalence and incidence rates of dementia varied according to the diagnostic criteria used. Significant differences in cognitive functions were found between younger (30-44 years) and older (45+ years) subjects. The older group was also found to show greater cognitive deterioration over the 18-month period. In addition, the results demonstrate the erroneous conclusions which may be reached when samples are drawn from day centres rather than through the present unbiased method of sampling. After chronological age, the apo Σ 4 genotype was found to be the most important risk factor for AD in the DS population. **Conclusions:** Overall, the age-related pattern of presentation and dementia diagnoses differs from that seen in the general elderly population. However, age-specific prevalence and incidence rates of AD and the pattern of cognitive decline were similar though appearing approximately 30-40 years earlier in life in the DS population. The results also suggest that most

of the neuropsychological test batteries and diagnostic instruments used in the study are suitable for assessing cognitive functions and cognitive decline in adults with DS. Certain risk factors were found to be more important than others in this population. Possible explanations for these findings are proposed.