Title: The Tampere Sudden Death Study – forensic autopsy material

Authors:
Eloise H Kok, Terho Lehtimäki, Pekka Karhunen, Liisa Myllykangas

Keywords:
autopsy, pathology, brain, immunohistochemistry, neurodegeneration

Abstract

No one survives dementia. Neurodegenerative disorders including Alzheimer's and Parkinson's affect an increasingly large proportion of elderly individuals, burdening health and social services. A major caveat is an incomplete understanding of causative factors and disease progression.

The aim of this research project is to assess prevalence of common dementia-associated neuropathological changes across age groups in an internationally unique, unselected forensic autopsy cohort: the Tampere Sudden Death Study (n=700) – a collection of autopsies performed on individuals who died out of hospital, requiring a forensic autopsy to determine cause of death. A variety of tissue samples (mostly paraffin-embedded) were collected from a broad age range (16-95 years) of subjects, encompassing a diverse scope of diseases that may be useful in collaborations as control tissues, or early stage detection of biomarkers.

Basic immunohistochemical staining of protein accumulations associated with neurodegeneration assessed in the context of the multitude of complimentary data available for this cohort (genomic, metabolomics, epigenetic data) will provide answers to aetiological mechanisms.

There are only very few studies worldwide in which the prevalence of dementia-associated neuropathology can be analysed in unselected populations, particularly in younger age groups. To date, we have shown that protein accumulations seen in Parkinson's disease appear in the mid 50's and Alzheimer's disease tau and amyloid beta aggregations are present in those aged as young as their 30's. This information is vital for when therapies become available, as to be the most effective they will have to be initiated at the earliest stages of disease processes.