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Heterogeneity and complexity in Alzheimer disease

Bradley T. Hyman

Massachusetts General Hospital, Harvard Medical School

Hyman, Bradley MD PhD Alzheimer Disease Research Center Massachusetts General Hospital Boston MA USA Heterogeneity and complexity in Alzheimer Disease Introduction: The clinical rate at which patients with Alzheimer disease progress varies enormously. This heterogeneity might reflect inter-individual differences in response to disease, in baseline cognitive reserve, and to intercurrent or concurrent pathologies. However, another possibility can be considered, that different individuals with Alzheimer disease have different strains of the disease that differ in their virulence. Methods: We reasoned that the rate of tau propagation might uncover different strains of Alzheimer pathological changes. We used a tau bioassay to determine Tau seeding ability. Thirty two brains were examined. Results: Cases varied in tau seeding properties by 2 fold or more. The extent of tau seeding paralleled the rank order of rates of progression of the patients, as assessed by longitudinal clinical assessments. Discussion: Differences in Tau seeding bioactivity might reflect different strains of tau and contribute to the heterogeneity of Alzheimer disease.

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Neuropathology training in Japan

Mari Yoshida

Department of Neuropathology, Institute for Medical Science of Aging, Aichi Medical University

Currently, the definitive diagnosis of many neurological diseases remains dependent on direct examination of tissues obtained by biopsy or at autopsy. On the arrival of super-ageing society and the increase of dementias, there is a worldwide need for well-trained neuropathologists capable of making precise diagnoses and communicating the findings that can be widely understood. The Japanese Society of Neuropathology (JSN) was established in 1966. JSN is an interdisciplinary society with over 1200 members, consisting of neuropathologists, pathologists, neurologists, psychiatrists, psychiatrists, forensic pathologists, veterinarian, and basic neuroscientists. The Japanese Society of Pathology has a 3 or 4-year course of training and board certification, but it does not have subspecialty of neuropathology. Therefore, there has not been specific residency or certification for neuropathology and consequently it is difficult to train young neuropathologists and resulted in decrease of the faculty of neuropathology. Members of the JSN are presently discussing improvement of the specialist system of neuropathology. The core competencies for diagnostic neuropathology includes central nervous system, muscle biopsy, peripheral nerve biopsy, and surgical pathology. We believe the existence of formal neuropathology training systems may contribute not only to diagnostic neuropathology, but also to understand structure and function of the human brain. Neuropathology trainees should realize that enormous opportunities remain for research into brain function and disease.