



The PSP Association's International Medical Workshop 7th July 2009

ABSTRACT

Title of Talk: PSP INFECTIOUS CAUSES

Part 1: Speaker(s) details	
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Part 2: Abstract (Maximum 400 words) Please make your abstract easy to understand as it will appear on our website and will be read by people with PSP and their carers who are not scientists but who will want to understand your work and what it means for them.

Background: Progressive Supranuclear Palsy (PSP) is a rare movement disorder of obscure causes. The brain contains abnormal structures called neurofibrillary tangles (NFT) and excess of an abnormally phosphorylated protein called tau, in common with some other neurodegenerative diseases such as Alzheimer's disease (AD), cortico basal degeneration (CBD), Guam PD-dementia complex, Guadeloupe PSP and post-encephalitic parkinsonism (PEP). In many of these conditions ('tauopathies' a genetic mutation is associated and may be causative but this is not the case in PSP. Infection is one possible cause. A literature review was performed for evidence that might support this possibility.

Results: Infections were classified into bacterial, viral, retroviral and prion-like. Streptococcal infection has been proposed as a trigger for sporadic encephalitis lethargica which may in turn be followed by PEP which has some clinical and pathological similarity to PSP. The 1916-18 epidemics of encephalitis lethargica were followed by PEP. Despite this, no infectious cause has been found. Herpes Simplex type 1 (HSV1) infection is a common current cause of encephalitis and rarely may cause parkinsonism. There is limited evidence that HSV1 may be re-activated at the onset of AD and that HSV1 may result in phosphorylation of tau protein in cell culture. Retroviral infection typically causes HIV-AIDs which may induce parkinsonism but there is no evidence of immunosuppression in PSP as might be expected. There are two major clusters of a tauopathy - in Guam and in Guadeloupe but in neither instance has an infection been found. A respiratory virus might cause tauopathy by entering the brain through the nose and cause smell impairment. Olfactory dysfunction is recognised in PD, AD, and the Guam cases but not in PSP. About 35 years ago Gajdusek and colleagues were unsuccessful in their attempts to infect chimpanzees with brain extracts from patients with PD, AD or the Guam PD-dementia complex. However, recent mice experiments suggest that abnormal tau protein can be transmitted from one strain of mutant mice to another and that it will spread within the recipients' brain as if it was an infection. This is exciting new work that has to be replicated.

Conclusion: The evidence for PSP as an infection is weak but it is not excluded. Something must trigger the disease and it is unlikely to be entirely genetic. The recent suggestions that HSV1 may induce a tauopathy and the ability of abnormal tau protein in mice to be transmitted and to spread along anatomical pathways within the brain has opened up new lines of research.