The Canine Cognitive Dysfunction Syndrome as a spontaneous animal model for the study of Alzheimer's disease

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Faculty of Veterinary Medicine - Final degree project, January 28, 2019

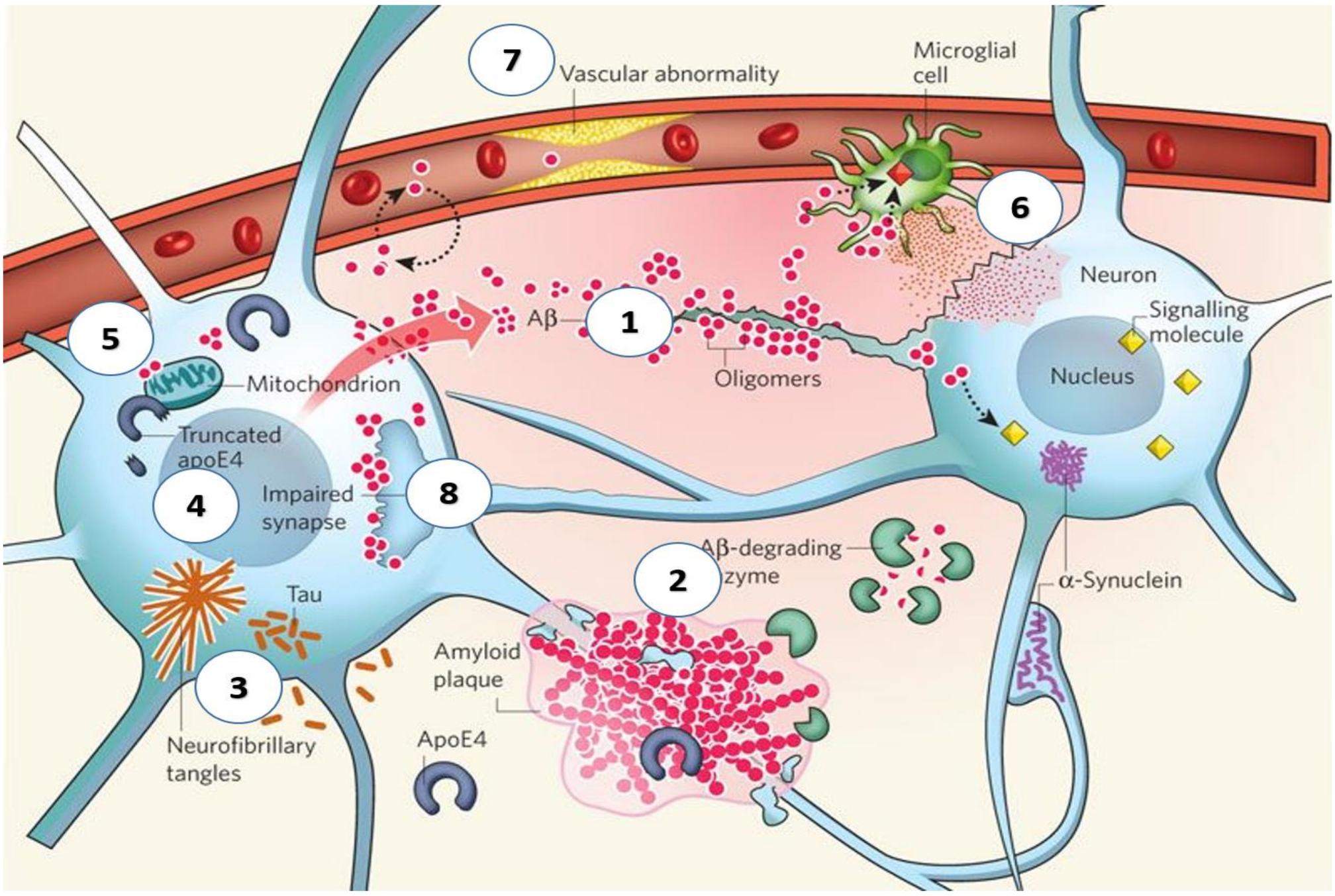
Introduction

Alzheimer's disease (AD) and canine cognitive dysfunction syndrome (CCDS) are progressive neurodegenerative dementias, which produce incapacitating cognitive and psychomotor losses to lead a normal life.

Objectives

The aim of this review is to identify the similarities and characteristics between the CCDS and the AD, in order to determine the validity of the dog as animal model *versus* other animal species used so far for the study of AD.

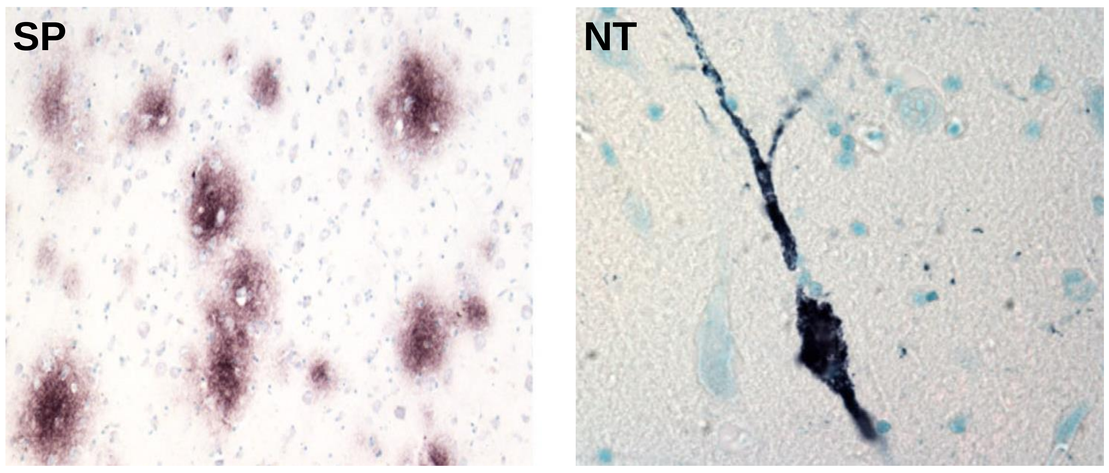
Pathogeny



(Modified from Mucke 2009)

Diagnosis

- Dementia tests: cognitive abilities and memory.
- Biochemical test: Aβ in plasma and cerebrospinal fluid.
- Image studies TAC and MRI. presence of Aβ in senile plaques (SP) and neurofibrillary tangles (NT).
- Genetic studies : risk assessment ApoE4, in humans.
- Histopathology: presence of SP and NT in the brain.



Brain of a CCDS case.(Modified from Smolek et al. 2016)

Conclusions

- The structure of the APP has a coincidence of 98%.
- The peptides and deposits of beta amyloid proteins (Aβ), formation SP , Hyperphosphorylation of the tau proteins (TAU) and the forming NT, are similar**.**
- Neurological changes, hyper activation of the glia and neuroinflammation associated with the development of SP and NT and the progression of cognitive losses.

The dogs affected by the CCDS are an excellence spontaneous model for the study of AD.

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