

Olfactory system pathology in Alzheimer's Disease

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Propositions belonging to the PhD thesis

Olfactory system pathology in Alzheimer's Disease: evidences from rodent and human studies

Gwooon Son

Maastricht, 26th of May 2021

1. Olfactory dysfunction is present in the early stages of Alzheimer's disease (AD) and in probable AD patients who have mild cognitive impairment. (*This thesis, Ch.2*)
2. The spatially conserved map in the olfactory system may play a critical role in the manifestation and progression of olfactory impairment in AD. (*This thesis, Ch.2*)
3. Early accumulation of β -amyloid in specific regions of the olfactory system including the olfactory epithelium in AD mouse model. (*This thesis, Ch.3*)
4. Decreased olfactory sensory neuron-derived activity and odor detection in AD mouse model are negatively correlated with $A\beta$ oligomers. (*This thesis, Ch.4*)
5. In the primary olfactory system, the domain where the olfactory sensory neurons regenerate greatly may provide the pathogenic pool and initiate a vicious cycle of AD pathogenesis derived from $A\beta$, such as hyper inflammation as well as HP- τ . (*This thesis, Ch.4*)
6. The first synapse in the primary olfactory processing pathway, the olfactory glomeruli showed plausible degeneration with $A\beta$ accumulation and microgliosis in AD patients. (*This thesis, Ch.5*)
7. Nasal fluid from the olfactory epithelium is feasible material containing high-throughput biological information that mirrors pathological changes in the olfactory system. (*This thesis, Ch.6*)
8. The presence of oligomeric $A\beta$ proteins in nasal discharge is a potential surrogate biomarker of AD and an indicator of cognitive decline progression. (*This thesis, Ch.6*)
9. Olfactory neuropathology may provide a new platform for conducting preclinical and clinical studies to improve diagnostics in AD and better understand the mechanisms behind neurodegeneration in AD. (*This thesis, Valorization*)
10. "Research is to see what everybody else has seen, and to think what nobody else has thought." *Albert Szent-Gyergyi*
11. "The stability of the internal environment [*the milieu int rieur*] is the condition for the free and independent life." *Claude Bernard – This is the underlying principle of homeostasis, a term coined by Walter Cannon.*