Canine cognitive dysfunction and neuroscience: an interdisciplinary approach

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We investigated:

How neuroscience (NS) and canine cognitive dysfunction (CCD) can inform and benefit each other?

We concluded:

- Neuroscience allows CCD to have more specific treatments focusing in neuroplasticity
- CCD lesions in hippocampus and neocortex can explain its ethological signs

Ethological signs explained by neuroscience

D — Disorientation
- Dorsal hippocampus is responsible for spatial learning

I — Altered social interactions
- Thalamus | Neocortex | Hippocampus | Amygdala

S — Sleep disorders
- Serotonin

H — Loss of housetraining
- Dorsal hippocampus for memory tasking
- Hypothalamus for thirst regulation

A — Altered activity
- Balance in neuroexcitatory and neuroinhibitory neurotransmitters

A — Anxiety
- Serotonin and noradrenalin
- Ventral hippocampus neurogenesis

How does CCD help NS?

Animal neurophysiology can not be investigated with current images techniques	CCD (and other neurodegenerative diseases) can be used as knock out of particular neurologic structures

How does NS help CCD?

There is no technique enabling an in vivo CCD diagnosis	Better neurophysiology understanding may help to develop new treatment options

Food for thought

- Which is the difference between an advanced aged brain and a brain with CCD?
- How is CCD being treated currently? And what about further horizons?
- Why specialization is important but collaboration is key?

Further readings

Landsberg, Gary M., Aladár Mad'ari, and Norbert Žilka. 2017. *Canine and Feline Dementia: Molecular Basis, Diagnostics and Therapy*.

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Final degree project

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