

Cannabis for treating severe agitation in a patient with Alzheimer's disease

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Case Presentation

Patient is an 85 year old woman with chronic back pain and dementia from Alzheimer's disease (AD), with worsening neuropsychiatric symptoms (NPS) and severe agitation.

- Progressive decline in short term memory over recent years.
- Sleeping for large portions of the day, then waking at night with anxiety and agitation and great difficulty going back to sleep.
- Progressively worsening agitation, especially if triggered by reminders of her memory issues, dementia diagnosis, or physical limitations. Agitated behaviors has been escalating - including yelling at and berating caregivers, becoming physically aggressive, throwing objects (including bodily fluids).
- Attempts at redirection and distraction didn't help.
- Medications tried included donepezil, alprazolam, and mirtazapine - none of which helped significantly. The mirtazapine did help some with sleep, but she had increased daytime sleepiness and began to wake at night with more frequent nightmares.

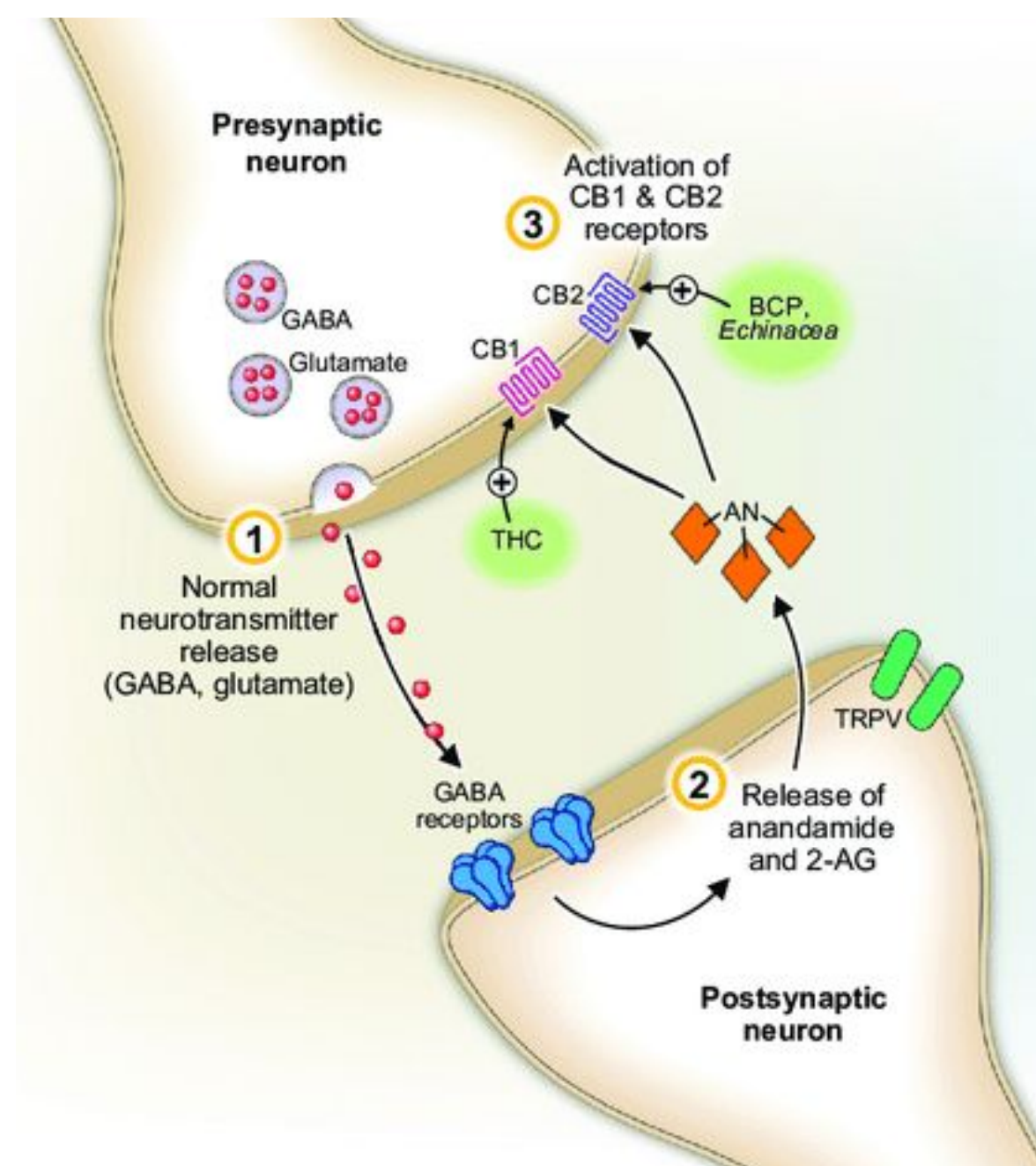
Family sought care from a cannabis nurse, and after education and guidance decided to start a regimen of :

Gummies with 7.5mg of 1:1 delta-9-tetrahydrocannabinol (THC) and cannabidiol (CBD) twice daily, a tincture of 100mg cannabidiolic acid (CBDA) daily, and a tincture of 20mg cannabigerol (CBG) daily. They would also use an edible with CBD/THC in a 20:1 mg ratio as needed for pain, anxiety, or agitation.

After starting this - they reported that she was sleeping through the night without nightmares or waking. Her chronic back pain resolved and she was able to stop taking steroids. Family reported no worsening confusion or euphoric "high" while awake. Only side effect that they noted was dry eyes.

Most importantly to them - they reported no further episodes of agitation and aggression, that her anxiety was "90% better," and described a much improved quality of life for both the patient and the caregivers.

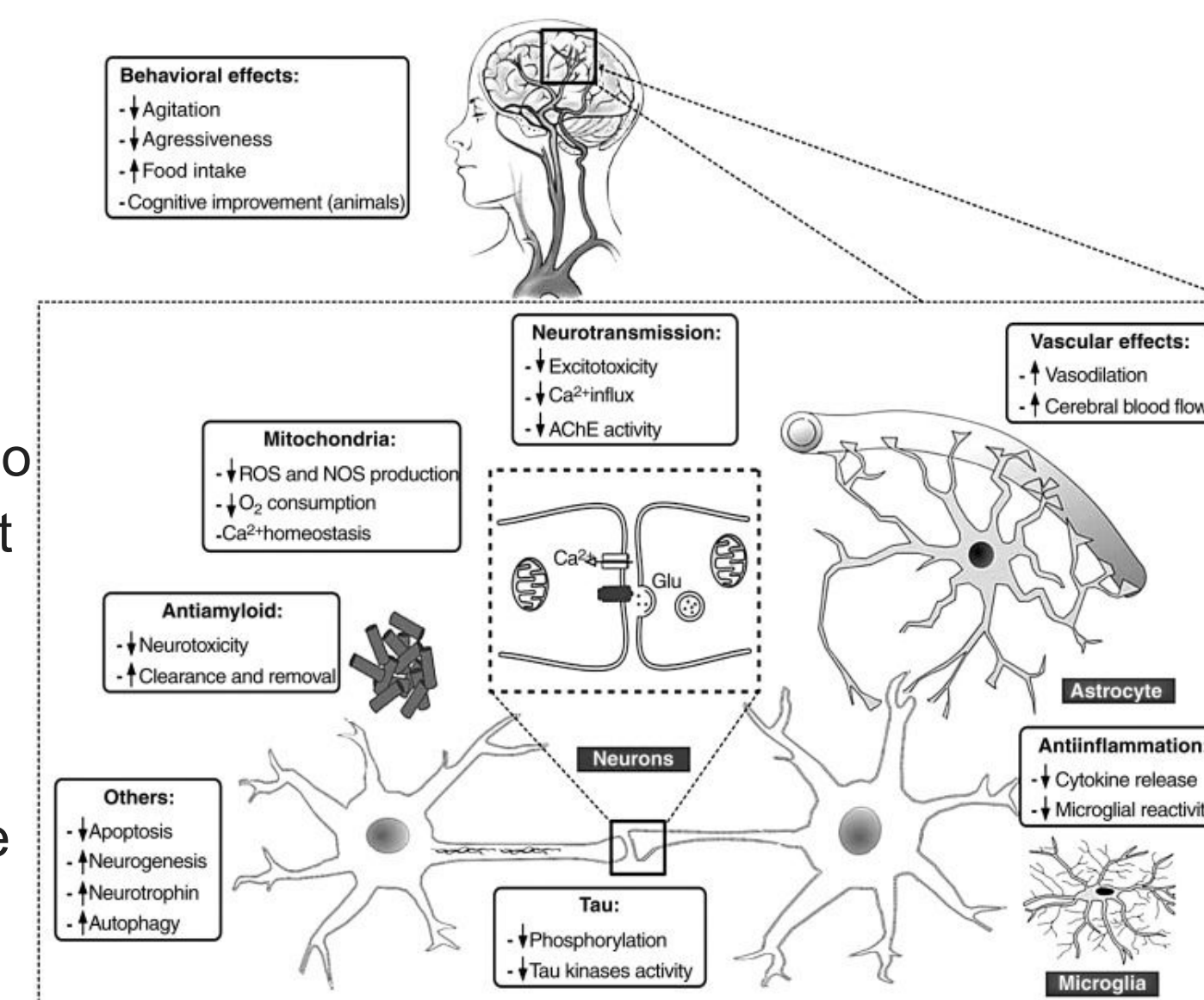
Endocannabinoid System



The natural endocannabinoid system consists of many receptors, including cannabinoid type 1 (CB1R) and type 2 (CB2R) and endogenous cannabinoid ligands such as anandamide and 2-AG (1).

CB1 receptors are located throughout the nervous system where cannabinoids likely maintain homeostasis and regulate cell to cell signaling by inhibiting presynaptic neurotransmitter release and modulating post-synaptic neuron excitability (2).

Cannabinoid effects on AD Agitation



- CB1 receptors are found concentrated in areas associated with higher level functions such as executive decision making, memory, and emotional response.
- Regulation of neurotransmitters - such as increased serotonin.
- Neuroprotective effects - reducing oxidative stress, and decreasing the burden of beta amyloid plaques in AD specifically (3).
- Help maintain normal circadian rhythm and sleep/wake cycles.

Discussion

- Alzheimer's disease is a common neurodegenerative disease and afflicts 6 million adults in the US (4).
- Neuropsychiatric symptoms are common, with agitation affecting more than 40% of patients - leading to patient distress, worsening cognitive function, caregiver burden, poor quality of life, increased institutionalization, and increased cost.
- Treatment may include medications such as antidepressants, anxiolytics, antipsychotics and sedative hypnotics. However, these have poor evidence for efficacy and come with risks for significant side effects including falls, cerebrovascular accidents, and death (4).
- Cannabinoids have been shown to be safe and well tolerated, with few short term side effects in patients with AD (5).
- There is growing evidence that they are helpful in treating NPS such as agitation and aggression (6).

Conclusion

We have presented a patient with severe agitation who found significant symptom relief after beginning a regimen of cannabinoids. Current literature is limited by primary studies that include low quality evidence or uncontrolled trials. Further research with controlled studies and larger samples is needed to evaluate the role for cannabinoids in this fragile population with limited safe and effective treatments.

References

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