Title:
INTRANASAL PHOTOBIMODULATION IMPROVES COGNITIVE AND MEMORY PERFORMANCE OF ALZHEIMER’S DISEASE PATIENTS IN CASE STUDIES

Presented at: NAALT/WALT Conference September 2014

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Abstract:
Introduction

Studies with transgenic mouse models have indicated that near infrared (NIR) photobiomodulation could improve Alzheimer’s disease (Alzheimer’s) conditions, expressed in improved cognitive and memory performances as well as reduced level of the biomarkers, amyloid-β plaque and neurofibrillary tangles. [1] [2] [3] Human Alzheimer’s patients with a much larger brain could respond if we deliver the right light energy to the lateral entorhinal cortex and the hippocampus - areas associated with the onset of Alzheimer’s.[4] These are close to the nasal cavity, suggesting that an intranasal light source could be most appropriate to efficiently deliver the photons to treat Alzheimer’s.

Materials and method

Two patients with significant cognitive impairment consistent with Alzheimer’s were put on intranasal light therapy devices manufactured by Vielight Inc. The devices have a wavelength of 810 nm pulsing at 10 Hz (50% duty-cycle), with the maximum power of 13 mW/cm² for 25 minutes, delivering 9.75 J/cm². The delivered elliptical beam spot size covers approximately 30 sq cm. The patients self-treated themselves with one session daily, assisted by their caregivers. Their mental state was measured with the Mini Mental State Examination (MMSE) over the period.

Results

After one year of treatment, the subjects no longer suffer from significant cognitive impairment, improving to normal, as measured with the MMSE. No adverse side effects were observed.

Conclusion

According to the Alzheimer’s Association, current treatments cannot stop Alzheimer's from progressing.[5] The results here potentially overturns convention. Larger controlled studies are needed to determine if intranasal photobiomodulation can be widely accepted as effective for Alzheimer’s.

References


