

# Development of nursing programme to assist medical treatment in early onset Alzheimer's disease

Akademisk avhandling

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The thesis is based on the following papers:

- I. Augustinsson L-E, Blennow K, Blomstrand C, Bråne G, Ekman R, Fredman P, Karlsson I, Kihlgren M, Lehmann W, Lekman A, Månsson J.-E, Ramström I, Wallin A, Wikkelsö C, Gottfries C-G, Svennerholm L.  
**Intracerebroventricular Administration of GM1 Ganglioside to Presenile Alzheimer Patients.**  
*Dementia and Geriatric Cognitive Disorders.* 1997;8:26-33.
- II. Svennerholm L, Bråne G, Karlsson I, Lekman A, Ramström I, Wikkelsö C.  
**Alzheimer Disease – Effect of Continuous Intracerebroventricular Treatment with GM1 Ganglioside and a Systematic Activation Programme.**  
*Dementia and Geriatric Cognitive Disorders.* 2002;14:128-136.
- III. Ramström I.  
**Stimulation-activation-training in early onset Alzheimer's disease: A pilot study.**  
*Journal of Chinese Clinical Medicine.* 2010; 5(7):425-432.
- IV. Ramström I, Sätterlund Larsson U.  
**Description of everyday life with a partner suffering from the early onset of Alzheimer's disease: a pilot study.**  
*Journal of Chinese Clinical Medicine.* 2010; 5(6):326-334.
- V. Ramström I.  
**Linguistic development in Alzheimer's disease: 12 months language training including use of a personal computer system-A pilot study.**  
*Developmental Neurorehabilitation.* 2011;14(3):156-163.

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# ABSTRACT

Alzheimer's disease (AD) is accompanied by neural degeneration with loss of dendrites and synapses. The ganglioside GM1 has been shown, but not in AD, to have positive influence on the nerve cells and stimulate growth of dendrites and synapse formation. Mental stimulation has also been shown to have similar and therapeutic positive effects. Theoretically those two treatments could together give an answer of it is possible to reverse impairments in AD.

In two studies GM 1 was given intrathecally, to pass the blood brain barrier, in combination with a training treatment. In the first one year study five patients with AD were activated by daily activities carried out at home by the spouses. They were supported with the activation but this diminished with time. The study indicated that the patients increased their willingness to and of active performances. The effect of GM1 was very dose dependent and showed increased levels of transmitters. A mix of some improvement and decreased values was shown in the neuropsychological assessments. The study was summarised in Paper I.

In the next one year study the GM1 treatment was combined with a newly developed programme with Simulation, Activation and Training carried out by professional in a homelike setting. The patients were highly engaged in the SAT programme. The evaluations of neuropsychological examinations indicate individual more preserved and slight improvement than decreased values. The increased levels of transmitters may suggest GM1 exerting a neurotrophic effect.

Paper III described the SAT programme, the systematic training, the various form of direct and indirect stimulation, and of practical performance of cognitive, social and physical activities of daily life. The results demonstrated after one year the patients had shown ability to an active participating, specified in the complex activity performance, ability to use of remaining abilities in compensatory strategy, and competence to learn and use a new tool, a personal computer system. The examinations showed scores of preserved and improvement ability.

Paper IV evaluates monthly reaction from the spouses of the patients, which provided information of the daily life at home as related to AD. These notes were voluntary comments given during one year. Four themes emerged of which the partner's social and activity level was evident. The results suggested educational interventions to be tailored to spouses with use of different caregiving perspective due to the visually complex symptoms and of recognizing healthy emotions which may prevent problems of incidents.

Paper V assessed linguistic development during the one year treatment in the SAT programme. The language sessions was interlaced in the cognitive and social training in which a computer further stimulated the patients to use their preserved language ability. The assessment showed that a group pattern occurred of language comprehension, the cornerstone of everyday life. The scores were maximum on reading comprehension and reading aloud during the whole assessment in spite of their dyscalculia or poor arithmetic ability.

These studies suggest that in order to improve cognitive functions in pharmacological interventions to further enhance the treatment effect, by offering a rich homelike setting, and practical activities of normal daily life, adapted to individual capacity. The studies imply the importance of adequate intervention of use of various ways to stimulation of remaining abilities to practical performance in active participating of daily life. The studies stress the need in order to reach optimal treatment, to use a combination of a pharmacological agent and the influence of adopted environmental stimulation. This is probably necessary to influence the neural degeneration of patients with early onset mild to moderate AD.

**Keywords:** Alzheimer disease, GM 1, ganglioside, intracerebroventricular, transmitter substances, stimulation, activation, training programme, spouses experiences, linguistic, personal computer system. **ISBN:** 978-91-628-8558-8. <http://hdl.handle.net/2077/30269>