

Neurology 2020: Delivery of nerve growth factor via nasal spray and CNS therapy: State of the art- Founder & President: Maria Rosaria Maglione Foundation onlus, Italy

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Antipsychotic drugs are prevalent for the treatment of psychological disorder like schizophrenia. Schizophrenia is a chronic, severe, and hampered brain disorder that has affected people throughout history. It affects how a person thinks, feels and acts and may have difficulty distinguishing between what is real and what is imaginary. The cause of schizophrenia still remains unclear though some researches stated that this disease may be triggered by genetically problem running in families and biological factors like the imbalance in the brain's chemistry, viral infections and immune disorders. Is there any relation among autism, ADHD, poor learning, stress, depression & mental health? Nerve growth factor (NGF) is the Founding Member of the neurotrophins family of proteins, known for playing a critical protective role in the development and survival of sympathetic, sensory and basal forebrain cholinergic neurons in mammals, including humans. NGF has a neuroprotective action in Alzheimer's and Parkinson's disease, as showed by several studies in animal models and humans. NGF can be delivered to the CNS via nasal route and has a neuroprotective action in case of neurodegenerative diseases and brain injury. Furthermore, recent studies have shown an active link between the nasal pathway and the spinal cord in the delivery of NGF to the CNS, thus demonstrating the neuroprotective ability of NGF to support injured neurons in a mouse model of spinal cord injury. Intranasal delivery of NGF has so far been sufficiently investigated in animal models and only recently in humans, as demonstrated in a recent study on long-term intranasal administration of NGF in two patients affected by Frontotemporal Dementia associated with corticobasal syndrome (FTD/CBS) and in another study on intranasal administration of NGF in a Brain Injury. These studies demonstrated the neuroprotective role of NGF administered nasally. Intranasal administration is the most effective and non-invasive way to deliver NGF to the CNS. These neuroprotective properties of NGF make it a strong candidate for the future treatment of neurodegenerative diseases and other pathologies of CNS (brain injury, spinal cord injury, ischemic damage) when administered via nasal route. NGF would not be able to cure the FTD/CBS but these observations support the hypothesis that NGF slows down the usual decline of the disease.

However, these studies reinforce the concept that neurotrophins are able to reach and protect the CNS via nasal route and open the way for new lines of research. Hence, these findings suggest the ability of NGF to protect CNS neurons when administered via nasal spray. Objectives: To assess clinically relevant symptom improvement in patients with major depressive disorder (MDD) receiving vilazodone by using the Montgomery-Aberg Depression Rating Scale (MADRS), a clinician-rated scale used to measure MDD symptom severity and improvement. Method: Pooled data from 2 positive, phase 3, 8-week, double-blind, randomized, placebo-controlled trials in patients with MDD were analyzed. The blood-brain barrier and the blood cerebrospinal fluid barrier are major obstacles in central nervous system (CNS) drug delivery, since they block most molecules from entering the brain. Alternative drug delivery routes like intraparenchymal or intrathecal are invasive methods with a remaining risk of infections.