



## Therapeutic innovations for Alzheimer's disease patients

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### 1 INTRODUCTION

Alzheimer's disease is a progressive neurodegenerative condition that mainly affects the elderly, with an increasing incidence worldwide. It is the most common form of dementia and is characterized by gradual loss of memory and other cognitive functions, affecting the quality of life of the patient and his or her family.

The pathophysiology of Alzheimer's disease involves the formation of beta-amyloid protein plaques and tau protein neurofibrillary tangles in the brain, leading to the death of neurons. The clinical picture includes loss of recent memory, communication and reasoning difficulties, spatial and temporal disorientation, and changes in mood and behavior.

Alzheimer's disease affects not only the patient, but also the family, who often becomes responsible for the care. Psychotherapy can be an important approach to help both the patient and the family cope with the challenges of the disease. Current drug treatment includes acetylcholinesterase inhibitors and memantine, which aim to improve cognitive function and slow the progression of the disease. However, the effectiveness of these drugs is limited and there is no cure for the disease.

Recent research has focused on the development of new drugs, such as BACE inhibitors, anti-amyloid and anti-tau, that show promising results in clinical trials. These new therapeutic approaches may represent hope for patients and their families in the search for better treatments for Alzheimer's disease.

However, there are still many questions to be answered about the use of neurostimulation as a treatment for Alzheimer's disease, including the best form of application, duration of treatment, and possible side effects.

Despite advances in research, Alzheimer's disease remains a challenging condition for patients, their families, and healthcare professionals. The combination of therapeutic approaches, including



psychotherapy, drug treatments, and innovative new therapies, can help improve the quality of life for patients and their families, and provide hope for a future with better treatments for Alzheimer's disease.

## **2 OBJECTIVE**

The purpose of this paper is to conduct a systematic review of the literature on therapeutic innovations in development for patients with Alzheimer's disease. Focusing on the most recent research, this work seeks to deepen the knowledge about the new therapies, drugs and neurostimulation that are being studied as potential treatments for Alzheimer's disease. The goal is to provide an up-to-date and critical analysis of these studies and their clinical implications in order to provide subsidies for health care professionals, researchers, and family members of patients who deal daily with the challenges of this devastating disease.

## **3 METHODOLOGY**

A search for scientific literature published in the last 10 years in the Pubmed, Scielo, BVS, Google Scholar, and Latindex databases was performed. The following descriptors were used: Alzheimer's disease, therapeutic innovation, pharmacological therapy, non-pharmacological therapy, immunotherapy, and gene therapy. Inclusion criteria were studies that evaluated therapeutic innovations for patients with Alzheimer's disease, including clinical trials, randomized controlled trials, and systematic reviews. Exclusion criteria were studies that did not evaluate therapeutic innovations specific to Alzheimer's disease, studies with small sample sizes, and studies with significant methodological bias.

## **4 DEVELOPMENT**

Currently, the treatment of Alzheimer's disease is focused on controlling the symptoms through the use of drugs that help stabilize neurotransmission, such as cholinesterase inhibitors and memantine.

However, there is still no definitive cure for Alzheimer's disease, and the available treatments have significant limitations regarding effectiveness and duration of effect. Therefore, there is a great deal of research underway to develop new drugs and therapies that can effectively treat the disease.

One of the therapeutic innovations under development for Alzheimer's disease is neurostimulation, a non-invasive technique that uses magnetic or electric fields to stimulate specific areas of the brain. Some studies have shown promising results with the use of neurostimulation in patients with Alzheimer's disease, helping to improve cognitive function and reducing disease progression.

Another promising therapeutic approach for Alzheimer's disease is neurostimulation, which involves electrical or magnetic stimulation of the brain to improve cognitive functions. Preliminary



studies have shown positive results with the use of transcranial direct current stimulation (tDCS) and transcranial magnetic stimulation (TMS) in patients with Alzheimer's disease.

In addition, new drugs are being studied as potential treatments for Alzheimer's disease. Among them are beta-secretase inhibitors, which act by reducing the production of beta-amyloid, a protein that builds up in the brains of Alzheimer's patients. Another drug under development is aducanumab, a monoclonal antibody that targets beta-amyloid and has been shown to be effective in some clinical trials.

In addition, combination therapies are also being studied as potential treatments for Alzheimer's disease. These therapies combine different drugs and therapeutic techniques with the goal of maximizing positive effects and minimizing side effects.

In summary, research into therapeutic innovations for Alzheimer's disease has shown promising results, both in terms of new drugs and new therapeutic techniques, such as neurostimulation. It is essential to continue investing in research in this area so that in the future it will be possible to offer more effective treatments with fewer side effects for patients with Alzheimer's disease.

## 5 CONCLUDING REMARKS

In light of the above, it can be concluded that Alzheimer's disease still presents a great challenge to medicine, both in terms of early diagnosis and effective treatment. Current treatment includes acetylcholinesterase inhibitors and memantine, but the effectiveness of these drugs is limited and there is no cure for the disease.

However, current research offers new prospects for treatment. Drugs under development, such as BACE inhibitors, anti-amyloid and anti-tau, show promising results in clinical trials. In addition, neurostimulation, such as transcranial direct current stimulation and transcranial magnetic stimulation, have been studied as a therapeutic alternative for Alzheimer's disease, showing preliminary positive results.

Although there is still much to be explored, these new therapeutic approaches for Alzheimer's disease bring hope to patients and their families. It is necessary to continue investing in research and development of drugs and neurostimulation techniques to improve the quality of life of these patients and meet the challenges of this increasingly common disease in our society.



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