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Current Trends in the Treatment of Alzheimer's Disease

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ABSTRACT: Alzheimer's disease (AD) is one of the most prevalent type of neurodegenerative disease. It is the most common form of dementia, affecting over 35 million people worldwide. The major symptoms of AD are impaired thinking, confusion, restlessness, personality and behavior changes, impaired judgment, impaired communication, inability to follow directions, language deterioration, impaired thought processes. There is no such treatment for AD which cures it completely because the actual pathophysiology is still unknown and the medicines that are given to AD patients provide only symptomatic relief. The drugs used for the treatment of AD includes Rivastigmine, Galantamine and Donepezil which acts as Acetyl cholinesterase inhibitors and Memantine as NMDA receptor antagonist. But there are many side effects associated with these drugs such as loss of appetite, nausea, vomiting, diarrhea, muscle cramps, dizziness, fatigue and insomnia. Since the current therapies are available only in oral dosage forms and are associated with various limitations such as first pass metabolism, adverse effects in periphery and less efficiency at target organs due to minimum passage through blood brain barrier as of large molecules size. To overcome these limitations, there is an urgent need of new methods of drug delivery which will be more effective and safe. Numerous new strategies are being investigated to cross the BBB such as selective permeability and direct drug delivery to the brain via intranasal administration. The major advantages of the intranasal route include ease of self-administration, non-invasiveness, fast onset of action, avoidance of first pass metabolism, and least peripheral side effects. In the list of advanced therapies, Nanotechnology is also included which possess advantages of small sized molecules which can easily surpass BBB and can be modified easily. Because of their sustained release the dosage frequency also reduces. Research in these advanced fields for the treatment of AD will possess promising results in the future.

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