Milrinone: An advancement in the treatment of Alzheimer's disease

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Madam, Alzheimer's Disease (AD) is a complex neurodegenerative disease with a progressive degeneration of behavioural and cognitive functions such as memory.[1] Alzheimer's disease is characterized by amyloid-β plaques, tau protein hyperphosphorylation, microglial cell activation and release of inflammatory cytokines such as IL-1β leading to disease progression. Amyloid-β plaques act on Toll-like receptors on microglial cells, thereby activating them and causing the release of pro-inflammatory cytokines.[2] Milrinone is a Phosphodiesterase inhibitor that has vasodilatory effects in the vasculature and has shown to suppress neurocytes apoptosis and inflammation.[3]

A study performed on APP/PSI transgenic mice demonstrated that milrinone reduces formation of amyloid-β plaques, suppresses tau protein hyperphosphorylation and release of inflammatory cytokines and reduces neuroinflammation therefore improving memory and cognitive functioning and helps reduce the progression of Alzheimer's disease.[4]

As per recent statistics, low-middle income countries constitute 58% of the world's aging population and this is expected to reach 68% by 2050. China, South Asian countries including Pakistan and Western pacific neighbours have reported the fastest growth in their geriatric population.[5] In Pakistan, a country of approximately 220 million people with an increasing elderly population, there are very limited dementia trained specialists and available treatment options.[6] Milrinone, a drug conventionally being used in cardiovascular treatments, could help bridge this gap and allow us to cater to the increasing burden of Alzheimer's disease in Pakistan.

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