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Poster Presentation

A Novel High Tech Approach to Monitor the Pharmacotherapy of Alzheimer; a Narrative Review

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Abstract

Alzheimer's disease (AD) is multisystem and multifactor disease with a long no-symptom stage. We propose that a more effective approach to use fMRI as a still emerging, repeatable, non- invasive neuroimaging tools that can be very useful for evaluating, diagnosis, treatment and drugs- development. We studied 30 articles which published between 2008-2017 that included the effects of different biomarkers and tools for diagnosing AD and assessing, improving and detection of Alzheimer's medications. Attractive alternatives to the animal and human experimental modelling approaches are the "multi-scale", "multi-level" computational modeling approaches to AD drug discovery and therapy. 6 articles were about the animal models while we should try accepting the limitations of animal models and focus more on humanize research. Peer-reviewed publications were identified through search in PubMed, Google scholar and SCI-HUB by using the search terms "fMRI", "Alzheimer", "cognitive side effects", "drug", "pharmacological neuroimaging". The search was limited to articles published in English. Relevant articles were chosen based on clinical experience and the expertise of the authors. FMRI measures hold promise for multiple clinical applications. Generally, models especially pharmacological fMRI showed that drug repositioning is a cost-effective way to develop disease-modifying treatments over shorter timescale and future models should provide a theory of how increasing Ach levels using cholinesterase inhibitors and N-methyl-d-aspartate antagonists (NMDA) impact neural and behavioral processes in AD. Models should also investigate how memantine (NMDA antagonists) can reduce toxicity of beta-amyloids as reported in experimental studies.

Keywords: Alzheimer, Drug, FMRI, AD, Pharmacological Neuroimaging

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