

International Conference on

# DEMENTIA AND DEMENTIA CARE

August 20-21, 2018 | Singapore City, Singapore

## Novel molecular imaging technique to study dementia

**Rajendra Badgaiyan**

Department of Psychiatry, Icahn School of Medicine at Mt Sinai, New York

**D**iagnosis of dementia is mostly clinical. Because of subjective nature of clinical diagnosis, many patients are misdiagnosed. It results in patients not receiving proper treatment on time to slow down disease progression. It is therefore important to have a diagnostic technique that helps us make an early diagnosis. A novel neuroimaging technique that we recently developed could be useful. The technique called single scan dynamic molecular imaging technique (SDMIT) uses positron emission tomography (PET) to detect, map and measure dopamine released acutely during cognitive or behavioral processing. It exploits the competition between a neurotransmitter and its receptor ligand for occupancy of the same receptor site. In this technique after patients are positioned in the PET camera, a radio-labeled neurotransmitter ligand is injected intravenously and the PET data acquisition started. These data are used by a receptor kinetic model to detect, map and

measure neurotransmitter released dynamically in different brain areas. Patients are asked to perform a cognitive task while in the scanner and the amount of neurotransmitter released in different brain areas measured. By comparing it with the data acquired in age-matched healthy volunteers during performance of a similar task, it is possible to determine whether a neurotransmitter release is dysregulated in the patients and whether the dysregulation is responsible for clinical symptoms. Finding of a significant dysregulation in neurotransmitter release would confirm diagnosis of dementia and it will also help in differentiating different kinds of dementia. Since this technique measures neurotransmitter released under conditions of cognitive stress, it can detect changes at a very early stage, when dysregulation of is not expressed at rest but manifests under conditions of cognitive overload.

badgaiyan@gmail.com