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Differentiating Parkinson's dementia from other types of dementia

Diagnosis of Parkinson's dementia is mostly clinical. However, there are many forms of demetia. Treatment approach of some forms of demetia is di erent from those of the Parkinson's type. For example dementia due to Alzheimer's disease ar dependent on acetyl choline neurotransmission while Parkinson's demetia is due to dysregulated dopamine neurotransmission Because of subjective nature of clinical diagnosis, many patients are misdiagnosed with a di erent type of dementia, resultin in patients receiving wrong treatment. It is therefore important to have a diagnostic method that allows us to di erentiate dopamine and acetyl choline dependent dementia. A novel neuroimaging technique that we recently developed could be useful in this context. e 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 exploit the competition between a neurotransmitter and its receptor ligand for occupancy of the same receptor site. In this technique a er patients are positioned in the PET camera, a radio-labeled neurotransmitter ligand is injected intravenously and the PET data acquisition started. ese data are used by a receptor kinetic model to detect, map and measure neurotransmitter release dynamically in di erent brain areas. Patients are asked to perform a cognitive task while in the scanner and the amount of neurotransmitter released in di erent 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 which neurotransmitter release is dysregulated in the patients and whether the dysregulation is responsible for clinical symptoms. Finding of a signi cant dysregulation of dopaminergic neurotransmission would indicate a diagnosis of Parkinson's dementia while dysregulated acetyl choline neurotransmission would suggest dementia of Alzheimer's type.

Biography

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