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Recent advances in imaging Alzheimer's disease

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Abstract

Alzheimer's disease (AD) is the most common form of dementia. According to WHO, the number of people living with dementia worldwide is estimated at 35.6 millions. These numbers will likely double by 2030. Conventional diagnostic/imaging techniques such as CT, MRI and nuclear imaging are not definitive. Definitive diagnosis is done only at autopsy. It is believed that the pathology of the disease precedes 10-20 years before the clinical symptoms appear. It is desirable to have early diagnostic markers of the disease. A number of neuroimaging techniques that can be used to reliably assess aspects of neuroanotomy, physiology and pathology hold promise. Structural MRI provides information on brain atrophy in AD, and glucose utilization by FDG-PET has been used to identify AD patients. As amyloid plaques and neurofibrillary tangles are hall marks of AD, great progress is made in direct visualization of plaques and measurement of plague burden by PET imaging with radiolabeled amyloid affinity dyes. A number of C-11 and F-18 labeled compounds have made it feasible to undertake noninvasive longitudinal studies to better understand the role of amyloid deposition in the course of neurodegeneration in preclinical Alzheimer's disease. We have developed F-18 quinoline and showed that this tracer can detect amyloid plaques at an early age (4 months) in AD transgenic animals by PET and may be useful in monitoring the progression of the disease with age and efficacy of therapeutic interventions. Advancements in imaging technology; imaging agents and techniques may yield acceptable neuroimaging biomarkers for Alzheimer's disease.

Biography

He is professor of Radiology at UT Southwestern Medical Center at Dallas. He obtained his Ph.D. from Rensselaer Polytechnic Institute. Troy, NY. He worked at Abbott Lab. N. Chicago, IL. before joining UT Southwestern. He has more than 75 publications and several patents. He has been consultant to International Atomic Energy Agency (IAEA), Vienna. He has presented his research findings at national and international conferences through the years

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