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Review Article

The Changing Landscape of Dementia Diagnosis, A Case for Functional and Molecular Neuroimaging

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Hitherto, the diagnosis of Dementia especially in older people rested predominantly on the presence of a history of progressively worsening memory impairment and intellect over months. With advances in technology especially neuroimaging, the scope and variety of diagnosis is rapidly evolving.

Traditionally structural imaging involving computed tomography (CT) and magnetic resonance imaging (MRI) were engaged in the evaluation and or delineation of dementia subtypes predominantly Alzheimer's, Vascular or mixed dementias.

Growing evidence in the use of targeted functional imaging as part of the diagnostic process in dementia as in our clinical case review, acute presentation of dementia with Lewy bodies[1] in the clinical medicine journal of the Royal College of Physicians is now widely supported by guidelines of the European Federation of Neurological Societies (EFNS) and the National Institute for Health & Care Excellence (NICE).

The most commonly enlisted functional imaging in current practise are the DaTscan, a type of single positron emission CT (SPECT) used in the assessment of suspected Parkinson's disease or dementia with Lewy bodies (DLB). This enables the visualisation of dopaminergic activity in the basal ganglia as in our clinical case review. FDG-PET is gradually replacing HMPAO-SPECT as it gives a better spatial resolution and has superior sensitivity and specificity compared with HMPAO-SPECT[2]. NICE guidelines recommend that these two scans should be considered to help differentiate between non-dementia, Alzheimer's dementia (AD), vascular dementia (VaD) and Frontotemporal dementia (FTD) if the diagnosis is in doubt[3]

Clinically a heightened awareness and clinical suspicion remains the hallmark for the diagnosis of Dementia especially when they present acutely albeit functional imaging has a significant role to play in distinguishing subtypes of dementia especially in DLB. Our case review demonstrated this importance in piecing together the jigsaw.

The targeted use of functional neuroimaging like the DaTscan has the potential to change the landscape with early recognition, diagnosis and management of dementia especially in older people. The potential for further research is enormous and collaboration amongst clinicians involved in the care of patients with dementia in the years to come can open a new frontier in advancing knowledge in this regard. To this extent it is encouraging to note the introduction of molecular imaging (Beta-amyloid) PET that is now licensed for clinical use in the United Kingdom primarily to aid the diagnostic accuracy in Alzheimer's dementia[4] This latest modality of imaging in dementia will be an additional tool in the diagnostic process to improve accuracy of dementia diagnosis to the ultimate benefit of patient care and treatment.

It is our belief that recommended clinical neuroimaging practices in relation to dementia diagnosis can be improved on and become mainstream practice where applicable by heightened awareness especially on the role of targeted functional neuroimaging as in our clinical case review.

The potential for training in this regard especially in the appropriate interpretation of functional neuroimaging scans is critical to providing another cog in the wheel towards excellence in dementia diagnosis and care. Training will allow us to fully harness the potential inherent in this investigation modality as it is not unusual for clinicians in the field of dementia clinical practice at ward or clinic level to have alternative views on neuroimaging scan reports. Establishment of Multidisciplinary teams (MDT) amongst clinicians provide opportunities for sharing of information.

Our case review offers an insight into the potentials that functional and now molecular imaging could offer in opening up a new frontier of collaboration in advancing care in dementia. This could shape the lives of millions who are at risk or suffer with this ubiquitous diagnosis now and in the future.

Tapping into this will be a step in the right direction for acute diagnosis, care and follow up of patients whilst offering clinicians enormous possibilities for research and career development.

References

1. Olugbenro Akintade, Floyd Pierres (2019) Acute presentation of dementia with Lewy bodies. *Clinical Medicine Journal of the Royal College of Physicians Clin Med* 19:327-330.
2. Dane Rayment, Maya Biju, Rui Zheng (2016) Tarun Kuruvill Neuroimaging in dementia: an update for the general clinician. *Progress in Neurology & Psychiatry* 16-20.
3. National Institute for Health & Care Excellence (NICE). Clinical Guidance 42. Dementia: Supporting people with dementia and their carers in health and social care. London: NICE, 2006.
4. Andrew Byrne, James Prichard (2018) Beta- amyloid PET imaging for Alzheimer's dementia diagnosis. *Progress in Neurology & Psychiatry* 22: 19-22.

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