BSNR Standards Sub-Committee

PROPOSED STRUCTURED DEMENTIA TEMPLATE FOR ROUTINE CLINICAL PRACTICE

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This template is designed as an aid to General Radiologists, Neuroradiologists and trainees, particularly in the DGH setting. It is designed to be applied to CT and MRI as available.

1. Clinical Information:

The request form should ideally include:

- Measure of cognitive impairment (MMSE, MoCA etc.).
- Other features relevant to dementia diagnosis (executive, Parkinsonian, behavioural).
- Vascular risk factors (ASSIGN http://assign-score.com/estimate-the-risk/).
- Likely clinical diagnosis.
- Other relevant factors, family history, alcohol, occupation, head injury, previous neurosurgery etc.
- If clinical picture suggests early onset dementia, MRI is preferable and consider FDG PET CT, amyloid PET CT[1,2]
- If Parkinsonian features present, consider Ioflupane SPECT CT[1,2]

2. Structured Report:

- Comment on availability of previous imaging (as far back as possible).
- Description of CSF spaces and relationship to age. Pattern of atrophy (if present) according to global and regional criteria. Regional atrophy: would need to document frontal, anteromesial temporal, superolateral temporal, perisylvian, parietal, occipital, brain stem and cerebellar atrophy and importantly symmetry or asymmetry. Scheltens MTA score[3] and Koedam parietal atrophy score[4] can be used (Please see appendix).
- Note on presence or absence of hydrocephalus (if present an MTA score may be unhelpful).
- Comment on presence or absence of cortical and lacunar infarcts or old haemorrhages.
- Comment on presence of white matter hyperintensities/hypoattenuation, lacunes (holes), (microbleeds see below). White matter hyperintensities can be noted as none/mild/moderate/ (which corresponds to simplified Fazekas score[6]). Please use terms defined in the STRIVE[5] small vessel disease criteria.
- Presence or absence of microhaemorrhage (MARS[7] or BOMBS[8] score can be used) and/or superficial siderosis.
- Comment on any relevant abnormality such as anterior temporal vascular changes (e.g. CADASIL), cortical ribboning, basal ganglia and thalamic changes (prion disease), atypical Parkinsonian features (MSA/PSP/CBD), post traumatic cerebral damage, cortical lesion, space occupying lesion or incidental finding.

3. Conclusion:

- Consider the variable aspects of physiological ageing[9,10]. Try and decide whether normal or abnormal (or can't tell at a single time point). Comment on progression from the earliest previous scan available. Attempt to describe the dominant feature and if possible present the most likely differential diagnosis.
- If symmetric global atrophy, preferentially involving mesial temporal, superolateral temporal and parietal lobes, think AD [10-12] (please see Appendix for examples- AD can be variable).
- If predominantly parietal atrophy, consider posterior cortical atrophy (PCA) variant of AD.
- Consider a mixed picture, for example AD plus white matter lesions, lacunes, infarcts, which is most common finding in those with late onset dementia.
- If vascular disease dominates, consider vascular dementia (VD).
- If notable white matter hyperintensities, lacunes, and microhaemorrhages and/or superficial siderosis and/or old parenchymal haemorrhages, consider amyloid angiopathy.
- If marked white matter hypertensives and lacunes, with anterior temporal lobe involvement and relative striatal sparing, consider CADASIL.
- If asymmetric, left dominant severe anteromesial temporal and superolateral temporal atrophy, think FTD, semantic dementia[11.]
- If predominantly frontal atrophy, consider FTD (frontal variant,) alcohol if associated with cerebellar atrophy), trauma or AD variant.

- If asymmetric left sylvian atrophy and consider progressive primary non-fluent aphasia (PNFA).
- If marked cerebellar atrophy and frontal convexity atrophy, check the alcohol history.
- If orbitofrontal and anterior temporal atrophy and gliosis and/or haemosiderin deposition, consider trauma.
- If acute rapid history with psychiatric component and/or myoclonus, asymmetric cortical ribboning, and basal ganglia signal change with increased A-P gradient, consider sporadic prion disease. If basal ganglia changes and dorso-medial thalamic changes (pulvinar sign), consider variant CJD.
- If clinical presentation of movement disorder and preferential brainstem atrophy, consider the atypical Parkinsonian disorders such as PSP (midbrain – humming bird) or MSA (hot cross bun, middle cerebral peduncle atrophy with signal change, putaminal outlining).

4. References:

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4.1. Fazekas Score for vascular disease[6]

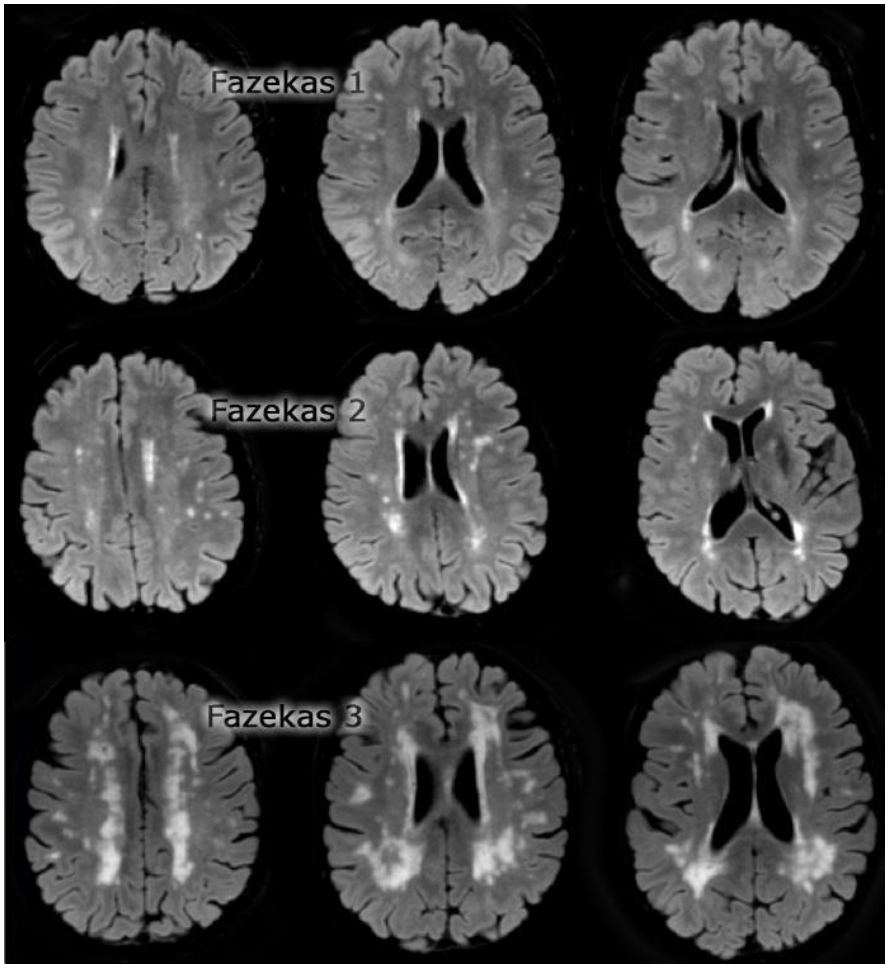
Provides an overall impression of white matter lesions. Best scored on FLAIR images. This is a simplified version of the Score:

0: None or a single punctate WM lesion

1 (mild): Multiple punctate lesions

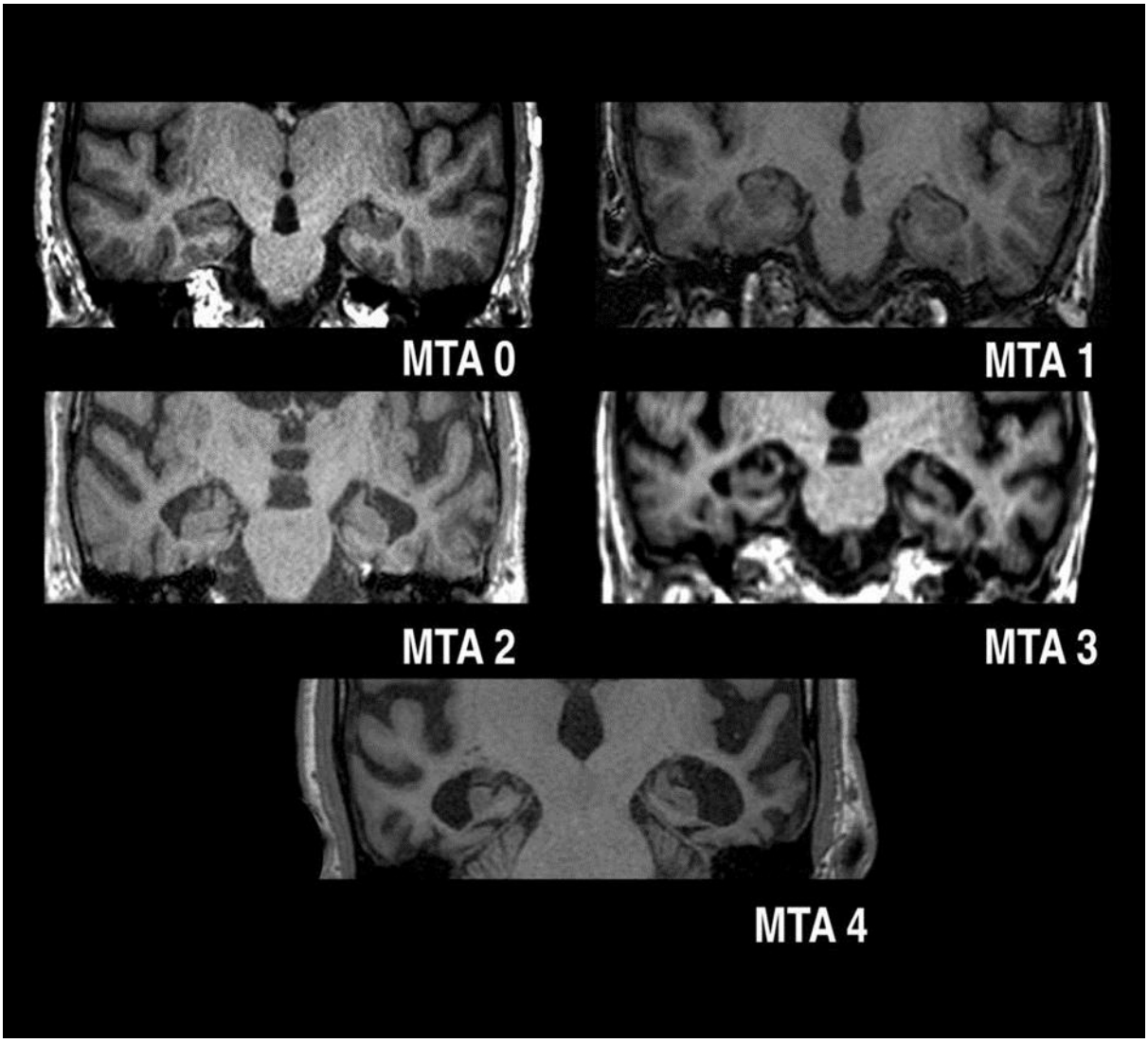
2 (moderate): Beginning of confluence of lesions (bridging)

3 (severe): Large confluent lesions

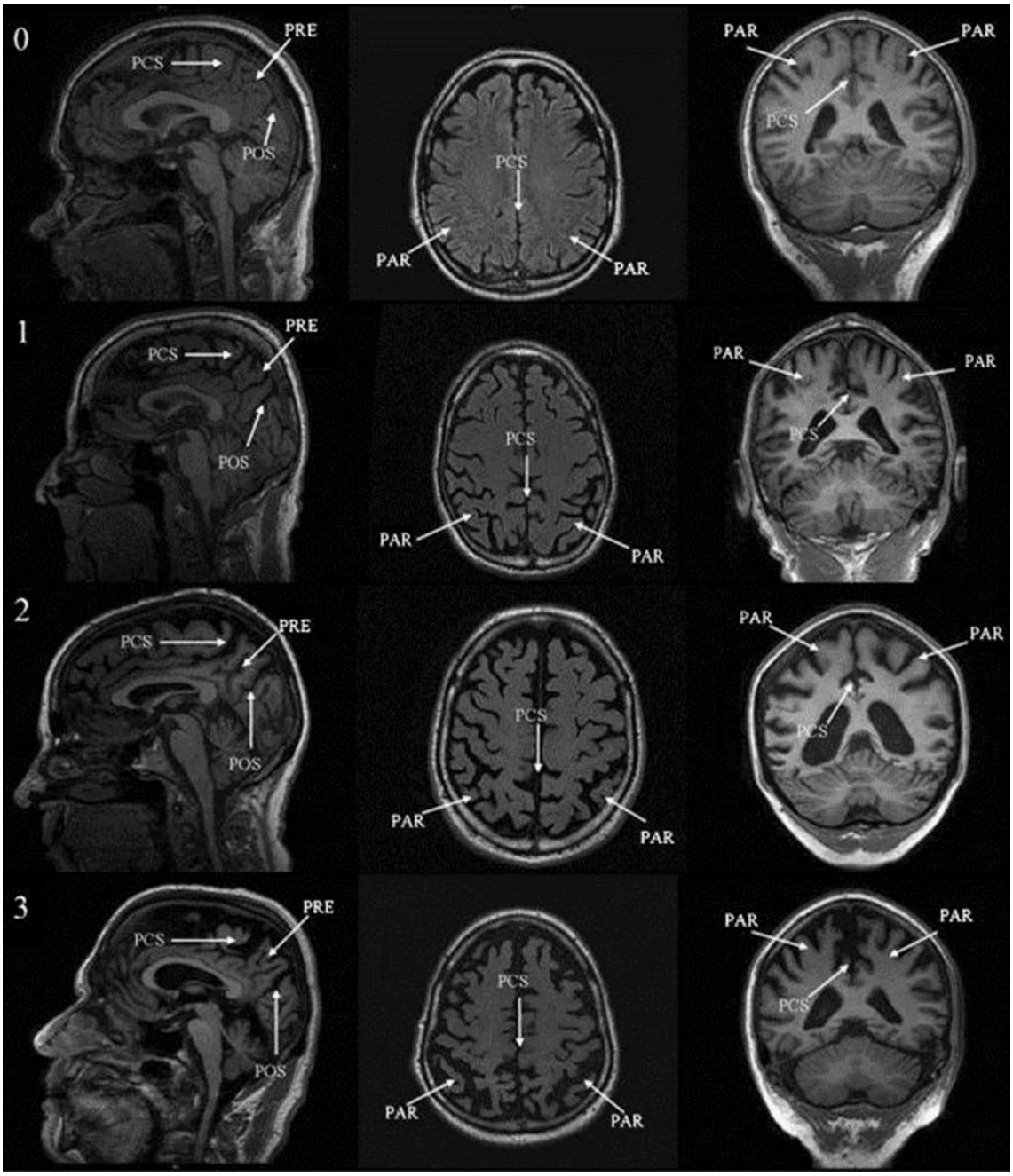


4.2.Scheltens medial temporal atrophy (MTA) rating scale[3]

Case courtesy of Dr Bruno Di Muzio, Radiopaedia.org, rID: 42027



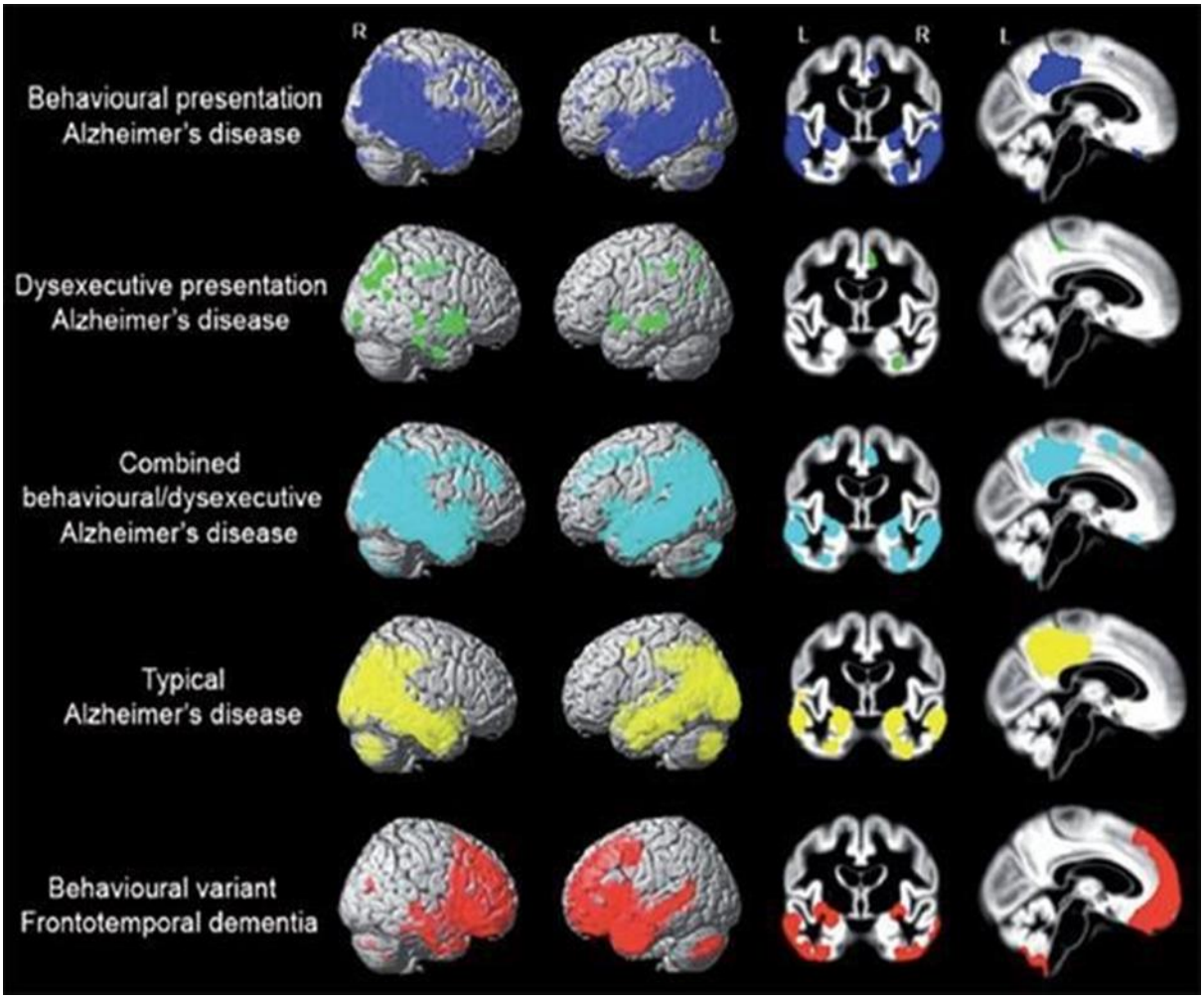
4.3.Koedem visual rating scale for parietal atrophy[4]



4.4.Different patterns of atrophy in Alzheimer's disease[12]

Image courtesy of the author and Oxford University Press. From the journal Brain, July 2015
[http://brain.oxfordjournals.org/content/early/2015/07/02/brain.awv19

1] (Please note, it is not just hippocampal atrophy)



Appendix 2

BSNR Standards Subcommittee (2015 – 2018)

Chair: Dr Gerardine Quaghebeur

Members:

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