

### 01-02-03 A NOVEL STAGING TOOL FOR DETERMINING DISEASE SEVERITY IN FRONTOTEMPORAL DEMENTIA PATIENTS

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**Background:** Frontotemporal dementia (FTD) patients present at first with a progressive deterioration of behaviour (bv-FTD) or language (semantic dementia, progressive non-fluent aphasia). As the disease progresses, however, the overall disabilities increase and behavioural and language symptoms merge across the different FTD subtypes. Despite important implications of better understanding of disease progression, no staging tool has yet been developed to track changes systematically. **Methods:** Data from 111 consecutive FTD patients from the Cambridge Early Onset Dementia Clinic were used for generating a novel FTD staging tool, using the Rasch analysis method. Mean length of disease, as measured by symptom onset, was 4.8 years. Mean patient age was 65; mean education was 13 years. Ratio of male : female patients was 3:1. The Rasch analysis provides the opportunity to identify which items best distribute patients in terms of their severity. In addition, the analyses place patients in a progression line, according to their level of ability. 82 questions on behavioural change and 41 questions on activities of daily living were the starting point for the Rasch analysis. **Results:** The Rasch analysis method generated a novel scale with a final set of 32 items, addressing behavioural and functional changes over time. Behavioural items (11) included questions related to change in motivation, disinhibition, impulsivity and appetite preferences whereas functional items (21) addressed changes in abilities to manage finances, prepare meals and looking after oneself. The final set of 32 items showed that the scale reliability was excellent, with a Cronbach alpha of 0.94. More importantly, Rasch item separation and patient separation was 3.85, indicating a progressive item and patient distribution, thus reflecting disease severity. **Conclusions:** Our new FTD staging scale is a powerful tool to assess patient's progression throughout the disease. More importantly, the scale can be easily administered by health professionals to determine quickly the disease stage of FTD patients. Finally, the staging tool generates evidence which has important implications for the information given to families and patients. It can also be used for monitoring disease modifying agents and should contribute to a better understanding of disease progression in FTD.

### 01-02-04 BEHAVIOURAL VARIANT FRONTOTEMPORAL DEMENTIA: LIMITED SENSITIVITY OF CURRENT CLINICAL DIAGNOSTIC CRITERIA

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**Background:** Diagnosis of the behavioural variant frontotemporal dementia (bvFTD) in life remains a challenge. According to the current clinical diagnostic criteria, a positive diagnosis is possible only when the following five core features are present: (i) insidious onset, (ii) decline in social interpersonal conduct, (iii) impairment in personal conduct, (iv) emotional blunting, and (v) loss of insight. A range of supportive features (e.g., hyperorality, utilization behaviour) and exclusion features (e.g., amnesia at presentation) are also considered when establishing the diagnosis. These diagnostic criteria are constraining and potentially ambiguous. Some features are open to clinical interpretation and their prevalence are unknown. This study investigated the sensitivity of current diagnostic criteria for bvFTD in a large group of bvFTD patients. **Methods:** Forty-five patients with clear evidence of bvFTD as judged by progressive clinical decline (longer than 3 years) with marked frontal features, and significant frontal brain atrophy on brain MRI were included. Thirty-two patients have died and pathological confirmation of frontotemporal lobar degeneration was found in all 18 cases coming to autopsy.

We established the prevalence of core and supportive diagnostic features at presentation and with disease progression. **Results:** Only 25/45 patients (56%) showed all five core features necessary for a diagnosis of bvFTD at initial presentation and 33/45 (73%) as their disease progressed. Two core features, emotional blunting and loss of insight, were never observed in 25% and 13% of cases, respectively. Executive dysfunction, hyperorality, mental inflexibility and distractibility were the only supportive features present in more than 50% of cases at initial presentation. Although considered an exclusion feature, five cases (11%) had severe amnesia at presentation. Although not a diagnostic feature, impaired activities of daily living was present in 33/45 patients (73%). **Conclusions:** Strict application of the criteria will miss a significant proportion of patients. Many supportive features have low prevalence and are clinically not useful. Revision of the criteria to include level of certainty (definite, probable, possible) dependent on the number of features present and the presence of ancillary information (e.g., brain atrophy, neuropsychological abnormalities, impaired activities of daily living) is encouraged.

### 01-02-05 EXERCISE AND LONGEVITY IN ALZHEIMER'S DISEASE

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**Background:** Physical activity (PA) may protect against development of AD and may prolong longevity in the general population. Nevertheless, it is not known whether it can prolong survival in patients who have already developed AD. **Methods:** Among community-based individuals in New York, aged  $\geq 65$  who were prospectively followed and had available PA assessments, 208 had AD at baseline (prevalent) and 357 were diagnosed with AD at follow-up (incident). Participants' PA (minutes of participation in 3 categories of activities [light, moderate or vigorous] at baseline for prevalent and 2.4 [sd 1.9] years pre-incidence for incident AD) served as the main predictor of mortality (110 [53%] deaths over 3.2 years of follow-up for prevalent and 150 [42%] deaths over 5.2 [sd 4.4] years of follow-up for incident) in Cox models that were adjusted for cohort, age, gender, ethnicity, and education (also duration between PA evaluation and onset of dementia for the incident AD analyses). Additional adjustment for APOE, smoking, dietary habits, caloric intake and baseline cognitive performance did not change the associations. **Results:** In prevalent AD analyses, compared to participants physically inactive, those who exercised moderately had a mortality HR of 0.87; 95% CI: 0.51-1.48;  $p = 0.62$ , while participants with high PA had a mortality risk of 0.45; 0.26-0.78;  $p = 0.004$  (overall HR trend 0.69 [0.53-0.89];  $p$  for trend = 0.005). In incident AD analyses, compared to physically inactive cases, those who exercised moderately had lower risk of dying (0.53; 95% CI: 0.34-0.80;  $p = 0.003$ ), while participants with high PA had an even lower mortality risk (0.41; 0.25-0.67;  $p < 0.001$ ) (overall HR trend 0.63 [0.49-0.81];  $p$  for trend  $< 0.001$ ). **Conclusions:** Exercise may affect not only AD risk but also its prognosis. Compared with AD patients who did not exercise at all, those who were physically active had 55-59% lower mortality. The possibility of reverse causality (PA being a surrogate index of AD severity) cannot be excluded. However, the fact that the associations were significant in incident AD analyses and despite adjusting for cognitive performance, makes this possibility less likely.

### 01-02-06 NEUROPSYCHOLOGICAL CORRELATES AND BRAIN SUBSTRATES OF ANOSOGNOSIA IN MILD COGNITIVE IMPAIRMENT

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**Background:** Anosognosia is a well-known though still misunderstood cognitive manifestation of Alzheimer's disease (AD). Previous findings in AD suggest that it is an early symptom (Tabert et al. 2002) involving the orbitofrontal cortex (Salmon et al. 2006). The present study aims at better