Can the Frontal Assessment Battery differentiate between Frontotemporal dementia (FTD) and Alzheimer’s disease (AD)?

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Introduction

Unlike MMSE, that measures global cognitive function, Frontal Assessment Battery (FAB) was designed in order to assess exclusively and easily some of the executive functions (Dubois et al, 2000). Although the executive dysfunction seen in FTD, is more marked than that seen in patients with AD, it remains controversial whether a brief cognitive testing with the FAB can differentiate patients with these diseases. Castiglioni et al (2006) found that total FAB score cannot discriminate AD from FTD, except a difference found in the task Go-no Go, in which AD group is more impaired. Furthermore, Lipton et al (2005) observed three subitems of the FAB that reflect different performance of each patient group. More specifically, performance of FTLD group was more impaired in mental flexibility and environmental autonomy, but motor programming was more impaired in AD group. In opposite, Iavarone et al (2004) found no significant difference in subitems, but only on FAB’s total score, a result in accordance with Slachevsky's study (2004).

Aims

Objective of this study is to define whether FAB scores or a ratio of the FAB/MMSE scores could be useful in the distinction between FTD and AD.

Methods

From a series of patients receiving comprehensive evaluation for dementia diagnosis in our department, including MMSE and FAB testing, 26 fvFTD patients and 26 AD patients,
matched for age at evaluation (M=68.9 St. Dev.=8.2), were compared in demographic variables (table 1), clinical features (Graph 1) and cognitive scores (table 2). One-Way Anova was applied in order to compare AD and FTD in education, age at onset of the disease, duration of the disease and MMSE. Mann Whitney was conducted for group comparison in FAB’s scores. Group differences were also analyzed for a composite measure reflecting the proportional executive dysfunction. This executive-to-global cognition index (E/G) was computed as a ratio: FAB score: 18 / MMSE score: 30.

**Results**

Despite the fact that AD and FTD had no significant differences in: global cognitive function (MMSE) F(1,50)=0.063 n.s, educational level F(1,45)=0.544 n.s, disease duration F(1,40)=0.077 n.s and age at onset of the disease, F(1,41)=0.896 n.s, FAB total U(26,25)=319.5 n.s, as well as item scores for: conceptualization U(26,24)=307.5 n.s, mental flexibility U(26,23)=286.5 n.s, motor programming U(26,24)=294.5 n.s, sensitivity to interferences U(26,24)=263.5 n.s and inhibitory control U(26,24)=295.5 n.s did not differentiate between groups. FTD patients scored significantly lower in the subitem of environmental autonomy (grasping), U=(26, 24)=227, p=0.036. The Executive/Global index score was significantly lower in the FTD group U=(26, 25)=192.5, p=0.013.

**Conclusion**

Among the six subtests of the FAB, environmental autonomy was the only task that discriminated FTD from AD, showing the core clinical feature of the frontal patients to exhibit systematically and automatically stimulus-bound behaviour. Most important of all is that, while an abnormal MMSE or a low FAB score is not indicative of the dementia type, an index computed with the total FAB and the MMSE score could be useful in the distinction between FTD and AD patients, because that index sketches a quick and more reliable
neuropsychological profile. Limitation of our study is that we did not include patients with the temporal type of FTD compared to AD as well as sample size.

References


