Title

Dementia experts' perceived diagnostic value of PET amyloid imaging

Authors

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Background

Amyloid PET imaging is a biomarker of amyloid pathology and can assist in the differential diagnosis of Alzheimer's Disease (AD) from other non-AD dementias. Evidence that amyloid PET has an impact on the diagnostic thinking of dementia experts is starting to emerge but is still limited (Vandenberghe et al., 2013; Grudman et al., 2012).

Aim

This study was aimed at assessing whether amyloid positivity/negativity has an impact on the diagnostic thinking of dementia experts (DEs) as assessed through an ad-hoc questionnaire.

Methods

This study was carried out in the context of a larger one on the diagnostic value of amyloid PET imaging in Eastern Lombardy, Italy. Twenty-two DEs of second level referral centres participated to the study. Six clinical case-vignettes representative of patients with diagnostic uncertainty were developed and submitted to the dementia experts. Each case-vignette included the following information: patient's age, sex, cognitive/behavioural symptoms, FDG-PET and MRI results, and initial diagnosis before amyloid-PET scan (e.g., typical or atypical AD, non-AD dementia). Dementia expert were then asked to rate the probability (from 0 to 100) of a change in diagnosis after knowledge of amyloid-PET results (positive Aβ+/negative Aβ-).

Results

When assessing the 6 case-vignettes, the highest probability of a change in diagnosis was for cases with an initial diagnosis of (i) AD with atypical profile (logopenic variant) and Aβ- (66% probability), and of (ii) subcortical ischemic vascular dementia and Aβ+ (62%). There was no significant difference between the two case-vignettes ($p>0.05$ on post-hoc ANOVA).

The lowest probability was in the cases with an initial diagnosis of (iii) LBD and Aβ- (14%), and of (iv) AD and Aβ- (33%). These case-vignettes were significantly different from case-vignettes (i) and (ii) ($p<0.01$). For cases with an initial diagnosis of bvFTD and CBD and Aβ+ the probability of a change in diagnosis was intermediate (43 and 44%). These values were significantly higher compared with those of case-vignette (iii) ($p<0.01$).

Conclusion

Amyloid biomarkers proved to be most informative to rule out an AD etiology in cases with atypical AD, and to support an AD etiology in cases with a non-AD dementia. A change in the diagnosis was less frequent in cases of suspected non-amyloid pathology.