A longitudinal study on quality of life along the spectrum of Alzheimer’s disease

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Abstract

Background: Quality of life (QoL) is an important outcome from the perspective of patients and their caregivers, in both dementia and pre-dementia stages. Yet, little is known about the long-term changes in QoL over time. We aimed to compare the trajectories of the QoL between amyloid-positive and amyloid-negative patients along the Alzheimer’s disease (AD) continuum of cognitively normal to dementia.

Method: In this longitudinal study, we included n = 447 (age 61.6±6.6, n(40%)F, Mini Mental State Examination (MMSE) 29(27-29), 23% amyloid-positive) patients with Subjective Cognitive Decline (SCD), n = 276 (age 64.6±7.0, n(33%)F, MMSE 27(25-28), 52% amyloid-positive) patients with Mild Cognitive Impairment (MCI) and n = 417 (age 64.4±7.0, n(51%)F, MMSE 23 (19-25), all amyloid-positive) with AD dementia from the Amsterdam Dementia Cohort. We used linear mixed-effect models (LMM) to compare QoL trajectories of the European Quality of Life-5 Dimensions (EQ-5D-3L and EQ-5D-5L) and Visual Analogue Scale (VAS) between 1) amyloid-positive and amyloid-negative SCD or MCI patients and 2) amyloid-positive SCD, MCI, and dementia patients. The models were adjusted for age, sex, Charlson Comorbidity Index (CCI), education and EQ-5D scale (3 or 5 level).

Result: In SCD, amyloid-positive participants had a higher VAS at baseline, but showed a steeper decline over time in EQ-5D and VAS than amyloid-negative participants (figure 1). Also in MCI, amyloid-positive patients had higher QoL at baseline, but subsequently showed a steeper decline in QoL over time compared to amyloid-negative patients. When we compared amyloid-positive patients along the Alzheimer continuum, we found no difference between SCD, MCI or dementia in baseline QoL, but QoL decreased at a faster rate in the dementia stage compared with the pre-dementia stages of SCD and MCI (figure 2). When we additionally adjusted for covariates in model 2, the effects remained.

Conclusion: QoL decreased at a faster rate over time in amyloid-positive SCD or MCI patients than amyloid-negative patients. QoL decreases over time along the entire continuum of AD of SCD, MCI and dementia, with the strongest decrease in dementia patients.
Figure 1. EQ-5D and VAS trajectories in amyloid positive and amyloid negative SCD and MCI patients. EQ-5D= the European Quality of Life-5 Dimensions, VAS= the Visual Analogue Scale, SCD= subjective cognitive decline, MCI=mild cognitive impairment
Figure 2. EQ-5D and VAS trajectories over time in amyloid-positive SCD, MCI and dementia patients. EQ-5D= the European Quality of Life-5 Dimensions, VAS= the Visual Analogue Scale