Diagnostic value of amyloid-PET and tau-PET a head-to-head comparison

Daniele Altomare, Camilla Caprioglio, Frédéric Assal, Gilles Allali, Aline Mendes, Federica Ribaldi, Kelly Ceyzeriat, Marta Martins, Szymon Tomczyk, Sara Stampacchia, Alessandra Dodich, Marina Boccardi, Christian Chicherio, Giovanni B. Frisoni & Valentina Garibotto

Abstract:

Purpose: Assess the individual and combined diagnostic value of amyloid-PET and tau-PET in a memory clinic population.

Methods: Clinical reports of 136 patients were randomly assigned to two diagnostic pathways: AMY-TAU, amyloid-PET is presented before tau-PET; and TAU-AMY, tau-PET is presented before amyloid-PET. Two neurologists independently assessed all reports with a balanced randomized design, and expressed etiological diagnosis and diagnostic confidence (50–100%) three times: (i) at baseline based on the routine diagnostic workup, (ii) after the first exam (amyloid-PET for the AMY-TAU pathway, and tau-PET for the TAU-AMY pathway), and (iii) after the remaining exam. The main outcomes were changes in diagnosis (from AD to non-AD or vice versa) and in diagnostic confidence.

Results: Amyloid-PET and tau-PET, when presented as the first exam, resulted in a change of etiological diagnosis in 28% (p = 0.006) and 28% (p < 0.001) of cases, and diagnostic confidence increased by 18% (p < 0.001) and 19% (p < 0.001) respectively, with no differences between exams (p > 0.05). We observed a stronger impact of a negative amyloid-PET versus a negative tau-PET (p = 0.014). When added as the second exam, amyloid-PET and tau-PET resulted in a further change in etiological diagnosis in 6% (p = 0.077) and 9% (p = 0.149) of cases, and diagnostic confidence increased by 4% (p < 0.001) and 5% (p < 0.001) respectively, with no differences between exams (p > 0.05).

Conclusion: Amyloid-PET and tau-PET significantly impacted diagnosis and diagnostic confidence in a similar way, although a negative amyloid-PET has a stronger impact on diagnosis than a negative tau-PET. Adding either of the two as second exam further improved diagnostic confidence.

Published: 27 February 2021

European Journal of Nuclear Medicine and Molecular Imaging

https://doi.org/10.1007/s00259-021-05246-x

Download this article on our AMYPAD Research Gate page here.
Download the PDF here.