

Open-source software suite for quantification of amyloid PET images

Publishable Summary

This deliverable is a descriptive report on the AmyPET multiplatform software (Windows, MacOS, Linux), developed as an AMYPAD scientific output for an end-to-end solution for quantification of amyloid PET brain scans with an emphasis on robustness and ease of use (open sourced at <https://github.com/AMYPAD/AmyPET>). This software supports all quantitative approaches implemented in the AMYPAD trials: AmyPET provides several modules for image analysis suitable for different types of acquisition: (i) static SUVr and Centiloid imaging; (ii) “coffee-break” protocol consisting of two dynamic scans separated by a break: an early scan to capture the early tracer kinetics, and a late, static-equivalent scan facilitating kinetic analysis; (iii) fully dynamic acquisition for full kinetic analysis. Four PET tracers are supported in the software: [11C]PiB, [18F]-flutemetamol, [18F]-florbetaben and [18F]-florbetapir. By default, AmyPET provides the standard and fully calibrated quantification procedure using PET data transformed to the MNI image space sampled with centiloid brain masks with isotropic voxel size of 2mm. The software also provides the option of native PET quantification with a choice of brain segmentations and parcellations which can be automatically calibrated to centiloid scale using the freely available GAAIN dataset. AmyPET meets several characteristics which have been identified to be useful for both the brain PET research and clinical communities that were previously not covered by any research or commercial software. Therefore, it is expected that AmyPET to be enthusiastically adopted by the brain PET research and clinical communities.

For more information: info@amypad.org

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