

一 般 演 題 抄 録

5. 脳FDG-PETと3D-SSPによるデータベース不要アルツハイマー病 自動診断ソフトの開発

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Purpose: To produce and evaluate an automatic diagnosis system using database-independent estimation system for the diagnosis of mild Alzheimer's disease (AD).

Methods: We retrospectively selected 66 subjects, including 33 patients with early AD, and 33 age-matched healthy volunteers (NC). Individual brain metabolic images were obtained using fluorodeoxyglucose and positron emission tomography (FDG-PET). These were transformed using three-dimensional stereotactic surface projections (3D-SSP). We then produced a computer-assisted diagnosis with a database-independent estimation system (CADDIES), which compares the parietal and sensorimotor metabolic counts using t-tests. If parietal metabolism was significantly lower than the sensorimotor metabolism, the subject was automatically diagnosed as AD. The FDG-PET images were also analyzed using a previous automatic diagnosis system (CAAD) that is dependent on the construction of a 'normal

database' of healthy brain images. Diagnostic performance was compared between the two methods.

Results: The CADDIES method exhibited similar diagnostic accuracy to the CAAD method. The CADDIES demonstrated a sensitivity of 88% and specificity of 79% and accuracy of 85%, while the CAAD system demonstrated a sensitivity of 70%, specificity of 94% and accuracy of 82%. The area under the ROC curve of CADDIES was 0.964. The areas under ROC curves of the CAAD method in the parietal and posterior cingulate gyri were 0.843 and 0.939, respectively.

Conclusion: The CADDIES method demonstrated a similar diagnostic accuracy to the CAAD system. Our results indicate that this method can be applied to the detection of early AD patients in routine clinical examinations, with the benefit of not requiring the generation of a normal database.