Article: EPA-1668
Topic: E05 - e-Poster Oral Session 05: Childhood and Geriatry, Depression

DIFFERENTIAL DIAGNOSTIC CLASSIFICATION OF SCHIZOPHRENIA AND DEPRESSION USING MRI-BASED PATTERN RECOGNITION

N. Koutsouleris[1], E. Meisenzahl[1], S. Von Saldern[1], L. Kambeitz-Ilankovic[1], C. Cabral[1], P. Falkai[1]

[1]Dep. of Psychiatry and Psychotherapy, Ludwig-Maximilian-University, Munich, Germany

Background: The clinical differentiation of schizophrenic and mood disorders is frequently challenged by co-occurring affective and psychotic symptoms. Thus, it has long been discussed whether these disease groups are subserved by common or distinct neurobiological surrogates.

Aims: The detection of diagnostic biomarkers for schizophrenic and mood disorders could facilitate clinical decision making in ambiguous cases.

Objective: To evaluated whether multivariate pattern classification of structural MRI enables the differential diagnostic classification of 158 patients with schizophrenia (SZ) and 104 patients with major depression (MD).

Methods: T1-weighted patient scans were processed using voxel-based morphometry. Diagnostic features were extracted from the age- and sex-adjusted GM maps using PCA and linear SVMs. Repeated nested cross-validation was emplyoed to assess the generalizability of diagnostic performance.

Results: Cross-validated classification accuracy was 76% based on a discriminative pattern involving perisylvian, limbic, medial prefrontal and precuneal GM volume reductions in SZ vs. MD. GM volume reductions in MD vs. SZ were detected in the premotor, sensorimotor, parietal, cerebellar and brainstem structures. The 'SZ-likehood' of MD was correlated with the age of disease onset, leading to a significantly higher misclassification rate among MD patients with an age of onset between 15 and 30 yrs.

Conclusions: The findings suggest that SZ and MD can be identified at the single subject level using neuroanatomical pattern recognition. The decreased diagnostic separability of MD patients with an early disease onset may challenge the traditional nosological boundaries and may relate to higher levels of chronicity and unfavorable disease outcomes in this patient population.

https://doi.org/10.1016/S0924-9338(14)78813-3 Published online by Cambridge University Press