Neuroimaging predictors of transition to psychosis : a systematic review and meta-analysis

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OBJECTIVES: In early stage psychosis research the identification of neurobiological correlates of vulnerability to schizophrenia is an important hurdle. METHODS: We systematically reviewed the neuroimaging publications on high-risk subjects with subsequent transition to psychosis (HR-T) and conducted a meta-analysis calculating the effect size Cohen's d. RESULTS: Out of 30 identified studies 25 met the inclusion criteria. Structural (s)MRI studies showed small to medium effect sizes of decreased prefrontal, cingulate, insular and cerebellar gray matter volume in HR-T compared to high-risk subjects without transition (HR-NT). Meta-analysis revealed relatively larger whole brain volumes in HR-T compared to HR-NT subjects (mean Cohen's d 0.36, 95% CI 0.27-0. 46). Compared to HR-NT, HR-T subjects showed in functional imaging studies reduced brain activation in prefrontal cortex, reduced neuronal density, and increased membrane turnover in frontal and cingulate cortex with medium to large effect sizes. CONCLUSIONS: Despite methodological differences between studies, structural and neurochemical abnormalities in prefrontal, anterior cingulate, medial temporal and cerebellar cortex might be predictive for development of psychosis within HR subjects.
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