It is not known whether regional brain N-acetyl aspartate (NAA) changes in the progression from prodrome to chronic schizophrenia. We used effect size meta-analysis to determine which brain regions show the most robust reductions in NAA first episode and chronic schizophrenia as measured by proton magnetic resonance spectroscopy and to determine whether these changes are present in individuals at high risk of developing schizophrenia. We identified 131 articles, of which 97 met inclusion criteria. Data were separated by stage of illness (at risk, first episode schizophrenia, chronic schizophrenia) and by brain region. For each region, mean and SD of the NAA measure was extracted. Significant reductions in NAA levels were found in frontal lobe, temporal lobe, and thalamus in both patient groups (effect size > .3; p < .01). In individuals at high risk of schizophrenia (of whom approximately 20% would be expected to undergo transition to psychosis), significant NAA reductions were present in thalamus (effect size = .78; p < .05), with reductions at trend level only in temporal lobe (effect size = .32; p < .1), and no reductions in frontal lobe (effect size = .05; p = .5). These data suggest that schizophrenia is associated with loss of neuronal integrity in frontal and temporal cortices and in the thalamus and suggest that these changes in the frontal and temporal lobe might occur in the transition between the at-risk...
phase and the first episode.