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### Long-term associations between use of antipsychotic medication and brain structural changes in Schizophrenia – A systematic review and a meta-analysis

The association between antipsychotic medication and long-term changes in brain structure in schizophrenia is unclear. Our aim was to systematically review longitudinal MRI studies with at least a two-year scan-interval on the relationship between the dose or type of antipsychotic medication and brain changes in schizophrenia. Studies were systematically collected using four databases and we also contacted authors for unpublished data. We calculated correlations between antipsychotic dose and/or type and brain volumetric changes, and used random effect meta-analysis to study correlations by brain area and tissue type. In total 29 publications from 16 different samples fulfilled our inclusion criteria. In meta-analysis higher antipsychotic exposure associated statistically significantly with decrease in parietal lobe volume (studies,  $n=4$ ;  $r=-0.14$ ,  $p=0.013$ ) and with increase in basal ganglia volume ( $n=4$ ;  $r=0.10$ ,  $p=0.044$ ). Most of the reported correlations between brain volume change and antipsychotic dose were statistically non-significant. We did not find any clear differences between typical and atypical exposure and brain volume change. The studies were often small and highly heterogeneous in their methods and seldom focused on antipsychotic medication and brain changes. To conclude, antipsychotic medication may associate with brain structure changes, however more good quality long-term follow-up studies are needed.

#### Biography

Jouko Miettunen has university degrees in statistics (MSc 1998; University of Oulu, Finland), epidemiology (MPhil 2003; University of Cambridge, UK), and psychiatry (PhD 2004; University of Oulu, Finland). Since 1997 he has work in various research positions at the University of Oulu, Finland. Currently he holds a position as a Professor in Clinical Epidemiology and he works also as an Academy Research Fellow of the Academy of Finland. He has over 150 peer-reviewed publications in field of psychiatry; his research focus has been especially on schizophrenia.

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