Longitudinal grey matter changes following first episode mania: A systematic review

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Background

• Bipolar I Disorder (BDI) is a leading cause of worldwide disability1
• There is some evidence for morphological change in BDI from healthy controls (HC), but the precise timing of these changes is unknown
• This systematic review was conducted to explore existing literature of longitudinal imaging in BDI starting at the first episode of mania (FEM)

Methods

• This review was conducted in compliance with PRISMA guidelines and submitted to PROSPERO (No. CRD42020146562)
• Systematic search using MEDLINE, EMBASE and Web of Science
• Screened 980 articles and included 15 in the final review

Findings

Findings (con’t)

Parietal-Occipital areas:
• Loss over widespread parietal and occipital areas2–7
• Increase in GM volume over follow-up in combined parietal-occipital lobes4

Temporal areas:
• Widespread loss in temporal areas over follow-up6,7,9

Subcortical structures:
• Difference in trajectory over the follow-up between BDI patients and HC in the amygdala10

Subgroup Analysis: Looking at factors such as analysis technique, episode recurrence, substance use, psychotic features or patient age-group (pediatric vs adult) displayed no discernible patterns in findings.

Conclusions, Limitations, & Future Directions

• The findings in the included studies varied widely
• The most common finding was of decreased cingulate volume in BDI patients compared with controls, both at baseline and at follow-up
• A big limitation was the difference in methodology – namely the structures studied, and analysis methods used
• Future studies could ascertain a standardized method of choosing brain structures and software analyses

Significance

By providing empirical data, we hope to guide future studies and stimulate interest in developing treatment that arrest neuroprogression to ameliorate clinical and functional outcomes in affected patients.

References


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