My parent has bipolar disorder; am I at risk? Brain imaging and clinical studies of bipolar offspring

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Bipolar disorders (BD) typically develop in late teens or early 20s and follow a recurrent course. The combination of early age of onset and life-long course make BD one of the leading causes of morbidity and disability worldwide. While heritability estimates for BD are as high as 89%, there are no widely accepted biological markers of the disorder and diagnosis is made based on behavioural symptoms. This complicates clinical work and contributes to the fact that correct diagnosis of BD often lags behind symptom onset by up to a decade.

Brain imaging has the unique ability to non-invasively investigate brain structure and function. Yet, brain imaging remains of limited diagnostic use in psychiatry, due to clinical heterogeneity and low sensitivity/specificity of between-group neuroimaging differences. Studying unaffected offspring of parents with bipolar disorders (BD), so called genetic high-risk design, decreases clinical heterogeneity and thus increases sensitivity for detection of biomarkers.

This presentation will review the results of brain imaging studies in participants at genetic risk for BD by us and others. I will focus on 1) the most replicated neurostructural signature of bipolar disorders (larger right inferior frontal gyrus); 2) prognostic relevance of larger IFG for future conversion to mood disorders;

3) the translational use of machine learning/pattern recognition analyses of MRI data to identify participants with or at risk for BD, and on; 4) novel brain imaging outcome measures, including brain age and their utility in differentiating between early stages of BD and early stages of schizophrenia.

At the end of this session, the participants will have an understanding of: 1) the factors affecting brain structure in mood disorders; 2) the main neuroimaging findings in participants at risk for BD; 3) the main reasons why brain imaging has remained of limited use in psychiatry, and: 4) developments, which could help in translating brain imaging from bench to the bedside.