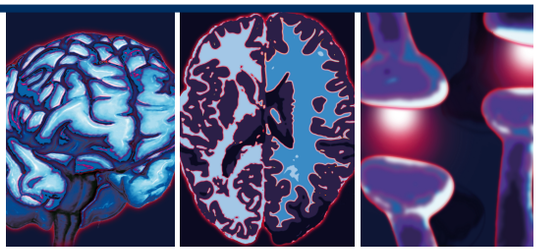
CLINICAL SNAPSHOT



Anatomical faces of neuroprogression in bipolar disorder

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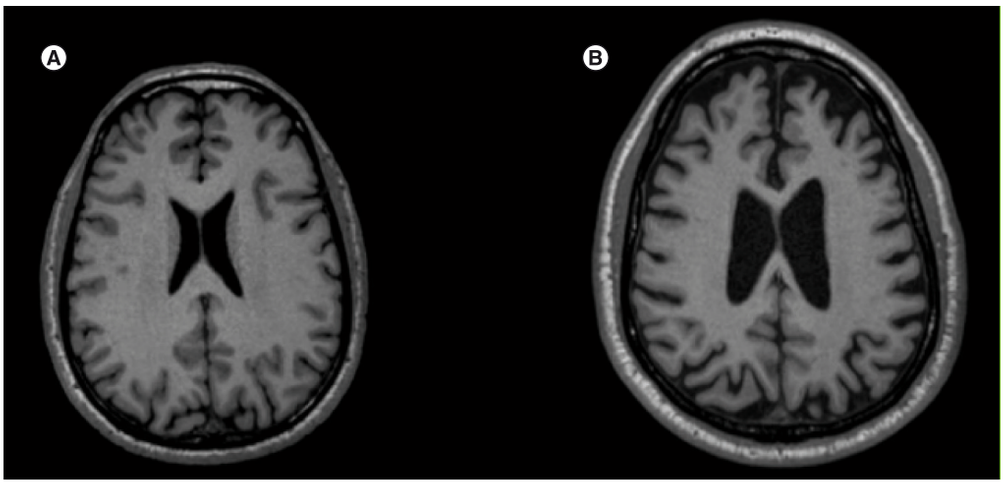

These two MRI images illustrate the anatomical changes associated with the progression of illness in bipolar disorder (BD). There is significant cortical atrophy and enlargement of ventricles in a patient with a history of multiple mood episodes **(B)** compared with a patient of the same gender and similar age that only experienced a few episodes and a shorter length of illness **(A)**. Alterations in brain structures have been reported in BD patients [1–4], and in these images it is possible to observe that such neuroanatomical changes are more pronounced after repeated episodes. In BD, neural substrate reactivity is changed by repeated mood episodes, ultimately promoting brain rewiring associated with increased vulnerability to life stress [5]. The neurobiological mechanisms of more pronounced neuroanatomical brain changes in patients with multiple mood episodes of BD appear to include increased oxidative stress, increased proinflammatory markers and a deficit in neuroprotection [6]. Acute mood episodes have been associated with significant systemic toxicity, cognitive and functional impairment and biological changes [7,8]. These effects are cumulative, being much more prominent after multiple episodes [9–12]. This suggests that mood episodes function as allostatic states, generating a load that accumulates

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and compromises regulatory systems, ultimately being responsible for the illness progression seen in BD. These changes in brain anatomy support the notion of neuroprogressive changes over time in patients with BD [6]. Neuroprogression can have important clinical implications, given that early and late stages of the disorder appear to present different biological features and therefore may require different treatment strategies. This image highlights the importance of longitudinal studies in evaluating the effects of illness progression on neurostructures and neurofunctions in BD. These findings may potentially have clinical implications by establishing means for monitoring the impact of treatments, as well as supporting more aggressive and earlier therapeutic interventions to minimize affective symptomatology and clinical deterioration. The possibility to identify neuroanatomical abnormalities with methods, such as MRI, will provide better insights into some of the potential pathophysiological mechanisms involved in illness progression, as well as better diagnosis, prognosis and long-term prophylaxis in BD.

Informed consent

Patients were recruited at the Bipolar Disorder Program, an outpatient program of Hospital de Clínicas de Porto Alegre, Brazil. This protocol was approved by the local ethics committee and the subjects provided their written informed consent for the collection and use of MRI images.

Financial & competing interests disclosure

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