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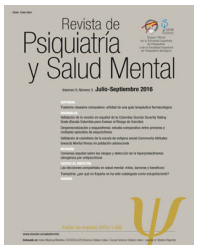

EDITORIAL

Making the most of biomarkers in psychiatry

Aprovechar al máximo los biomarcadores en psiquiatría

Benedicto Crespo-Facorro

Hospital Universitario Virgen del Rocio, IBiS, CSIC, Universidad de Sevilla, CIBERSAM

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A biomarker is ''a characteristic that is objectively measured and evaluated as an indication of normal biological processes, pathogenic processes, or pharmacologic responses to a therapeutic intervention''.[1] A critical challenge for psychiatric conditions is to identify objective biomarkers that are derived based on the subjective report of patients.[2] Valid and replicable central or peripheral biomarkers of brain disorders have long been hampered by clinical heterogeneity, lacking sample size and confounder influence, being therefore their clinical applicability questioned.[3] Together with huge advances in the field of brain imaging, the growth in several ''omics'' and other related fields have been impressive, having rendered key insights on the biological underpinning of psychiatric disorders.[4]

This issue of the *Journal*, focused on imaging and molecular biomarkers, presents relevant new findings that add to our growing knowledge and that provide us with new ideas about mechanisms, pathophysiological pathways, and treatment approaches.

Two original research articles in this issue [5,6] are accompanied by two outstanding systematic reviews on structural and functional neuroimaging biomarkers [7,8]. The meta- analysis by Soldevila-Matías et al., [7], examining cross-sectional fMRI studies comparing neural responses to cognitive tasks between first episode psychosis and healthy controls shows significant hypoactivation in the insula, precuneus and striatum. Importantly, the data from this study do not demonstrate additional frontal hypoactivation during cognitive tasks in FEP. In the article by Rodríguez-Toscano, genetic variability (*COMT* Val158Met polymorphism) influences prefrontal volume and executive functioning in first episode psychosis individuals.[5]

The search for imaging biomarkers associated to specific clinical symptoms or characteristics has also attracted great research interest in the last decades. In the largest review concerning studies on gray matter volume (GMV) and insight in non- affective psychosis, patients with reduced insight showed decreases GMV in widespread cortical areas and also the metanalytic analysis reveals an association between insular GMV and insight.[8] Biomarkers emerged from brain imaging analyses have been described in all mental illnesses, including eating disorders. In this issue, a thorough analysis of striatal volumes might be useful to stratifying individuals with anorexia nervosa, bulimia nervosa or eating disorders with comorbid personality disorders. [6]

Animal models are of great value to complement human studies with the aim of building up and testing plausible and valid hypothesis addressing likely biological mechanisms underlying mental illnesses. Fullana and colleagues[9] aim to understand

the rapid-acting antidepressant effects of ketamine by using a recently described depression animal model based on disturbed astrocyte-based glutamate homeostasis, they provide evidence about the involvement of molecular mechanisms affecting infralimbic cortices and how this pathological mechanism can be reverted by an acute dose of ketamine antidepressant.

The challenge of making the most of biomarkers in psychiatry may require to integrate the diversity of biomarkers emerged from cutting-edge neuroscience research (neuroimaging, genomics, molecular, cellular, animal models. . .) without losing the discipline's sophisticated understanding of behavior and emotion. Persistence and scientific rigor for the long and winding road towards the understanding of abnormal systems in mental illnesses is critical, as neurologists have done.[10] Before the early 2000s, the only certain method to know whether a person had Alzheimer disease was after death through autopsy.

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