HHS Public Access

Author manuscript

Am J Psychiatry. Author manuscript; available in PMC 2018 August 02.

Published in final edited form as:

Am J Psychiatry. 2016 July 01; 173(7): 732–733. doi:10.1176/appi.ajp.2016.16030320.

In Support of Neuroimaging Biomarkers in First-Episode Schizophrenia

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TO THE EDITOR

In the March, 2016 issue of the *Journal*, Gong et al. (1) selectively review the literature on treatment-related brain abnormalities in patients with first-episode schizophrenia. They emphasize the need for studies focused on patients early in their illness, as well the potential gains from neuroimaging biomarkers that track and predict treatment outcomes.

Supporting the growing literature of prospective studies in first-episode schizophrenia reviewed by Gong et al., we recently reported that longitudinal changes in striatal functional connectivity are associated with efficacious treatment by second-generation antipsychotic drugs (2). This work, conducted within a controlled clinical trial (NCT00320671) with pre- and post-treatment functional imaging revealed that efficacious treatment was associated with increased striatal functional connectivity with frontal and limbic brain regions mentioned in Gong et al., including the anterior cingulate, middle frontal gyrus, orbitofrontal cortex, and hippocampus. In addition, first episode patients with less improvement in psychosis demonstrated greater striatal connectivity with parietal regions. Another recent study applied longitudinal neuroimaging to examine abnormalities in large-scale functional networks in relation to treatment response in patients off medications, including a subset of treatment-naïve first-episode patients (3).

Moreover, in a paper published in the January, 2016 issue of the *Journal* (4), we reported that baseline functional connectivity of the striatum in first-episode patients with schizophrenia was predictive of the initial response to antipsychotic treatment. We derived an index of striatal connectivity that separated responders from non-responders in a discovery cohort, and tested our measure in a more chronic sample of patients undergoing treatment for acute psychosis. The sensitivity and specificity of this measure were 80% and 75%, respectively, in our replication. As highlighted by Gong et al., studies such as ours may be useful for guiding clinicians, while taking a step toward precision medicine approaches to the treatment of psychosis.

Dr. Malhotra is a consultant to Genomind, Inc, FORUM Pharmaceuticals, and Takeda Pharmaceuticals. Dr. Lencz has been a consultant to Eli Lilly. Dr. Sarpal reports no financial relationships with commercial interests.

Our work supports the longitudinal and prognostic framework for studies described in Gong et al., and stresses the need for biomarker-based treatment trials that trace patient outcomes. Collectively, these results provide momentum toward discoveries that may shed light on the elusive biology that underlies the dynamic progression of schizophrenia.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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