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Commentary

A Short Note on Biomarkers in Neuropsychiatric Diseases

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DESCRIPTION

Biomarkers are quantifiable indicators of a state, since they are scientifically measured rather than subjectively appraised, can be deemed more valid and reliable than so-called "pathognomonic" clinical indications and symptoms. In neuropsychiatric illnesses, over a million biomarkers have been found with the number quickly increasing over the last decade.

Biomarkers may be the antidote to the overwhelming obstacle of considerable heterogeneity found in numerous neuropsychiatric illnesses, but heterogeneity also poses a significant challenge to biomarker identification. Schizophrenia, autism, dementia, depression, Parkinson's disease, and other disorders are now recognized as spectra, or syndromes made up of a variety of diseases with a variety of hereditary and non-genetic etiologies and clinical phenotypes. Heterogeneity plainly affects neuropsychiatric research, particularly when study samples are chosen based on clinical diagnosis, which is plagued by ambiguous criteria, rather than observable biological

One of the most quickly increasing study fields in neuropsychiatry is biomarkers. The continual expansion of biomarkers as vital tools to guide the biology, diagnosis, treatment monitoring, and prognosis of complex and sometimes overlapping brain illnesses is aiding both neurology and psychiatry.

Biomarkers can be used as indicators of the efficacy or safety profile of a therapy intervention, or unintended exposure to toxins or nutrients in the environment, in addition to determining the biology, incidence, and outcome of a disease. Thus, biomarkers can indicate the interaction of an organism with dangerous chemicals or biological substances that can alter the organism's physiology or function at the molecular or cellular level.

Biomarkers, also known as "lab tests," have long been employed in clinical practice to validate diagnoses or track the effects of various interventions. Lab tests are scarce in psychiatry, but there are more in neurology. In neuropsychiatric illnesses, however, a slew of research biomarkers have been described, each with variable degrees of sensitivity, specificity, and reproducibility, all of which are critical for therapeutic use. As in the realm of oncology, validated biomarkers can help personalized medicine (in this case, precision psychiatry and precision neurology) with predictive and prognostic applications. Biomarkers are currently being used to stage neuropsychiatric illnesses such as schizophrenia, multiple sclerosis, dementia, and mood disorders, among others.

Biotechnology advancements have dramatically accelerated biomarker discovery. Proteomics and metabolomics are two techniques that can generate a variety of protein or metabolic parameters, such as carbohydrates, fatty acids, amino acids, and nucleic acids. Because of the relatively small number of biomarkers, the simplicity of accessing body fluids (plasma, CSF, urine, feces) for testing markers, and their relevance to inborn metabolic abnormalities, some argue that metabolomics has an edge over genomes and proteomics.

Brain morphology, brain development, neurophysiology, neurochemistry, and neuro-metabolic, as well as clinical characteristics, are all examples of biomarkers and end phenotypes used in neuropsychiatric illnesses. Across neurobiological and clinical characteristics, there has been and continues to be a lot of research published. This publication will speed up the transmission of peer-reviewed research on neuropsychiatric biomarkers and end phenotypes with clinical implications.

In summary, the increased interest in identifying biomarkers, as well as the growing recognition of their importance in neuropsychiatric disorders, positions this journal as a timely new machine for basic, clinical, and translational neurosciences investigators to publish their findings, accelerating the disentangling of the brain's myriad complexities and the large sets of neuropsychiatric syndromes generated by its numerous pathologies.

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