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Charting the neural pathways on a dissected human brain to elucidate the commonality of abnormal networks in Schizophrenia and Bipolar disorder

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While the pathophysiology of schizophrenia and bipolar disorders are poorly understood, researchers have used functional brain imaging in healthy volunteers and individuals with schizophrenia and BPD to map interrelationships between five brain networks. Brain networks are regions that function together and are responsible for its higher activities. Two networks showed diminished interactions in schizophrenia and BPD. On this platform of existing knowledge it was decided to chart the neural pathways on a dissected human brain and relate this to the pathophysiology of schizophrenia and BPD. After sagittally dividing a formalinized human brain, five components of basal forebrain, ventral tegmental area and cingulate gyrus were located on the model. Next, the meso-cortical and meso-limbic pathways were charted out on the brain model. Then the most probable locations of pathology in Types-I and II schizophrenia were pinpointed in these pathways. While obviously speculative, this approach enhances understanding of schizophrenia and BPD in several ways. Networks that are out of balance in both illnesses may be related to certain psychotic symptoms seen in both, such as delusions. This model provides the location of antipsychotic intervention on Dopamine-2 and 5HT-2 receptors for the amelioration of schizophrenia and possibly BPD symptoms. It also enables the neurologist to envisage the pathophysiology of schizophrenia and BPD in a more tangible way. Preliminary feedback from viewers of this model has been very positive. Finally, this brain model paves the way for focused imaging studies for more accurate localization of the pathological brain networks in both conditions.

Biography

Sanjoy Sanyal is Associate Dean, Clinical Neuroscience Professor, Surgeon and Informatician in Texila American University, Guyana, South America. He holds double Master's degrees from India and UK. He has published more than 50 papers in print and online journals. He is a Neuroscience editor and peer-reviewer of WebmedCentral. He has posted more than 300 Neuroscience videos online, accompanied by his running commentaries. He is currently writing a Neuroscience book for medical students. He has presented papers in more than 10 international forums. He holds a provisional patent from USPTO on a computerized program for staging 26 human cancers.

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