Neurocognitive deficits of schizophrenia and pharmacotherapy: Toward better outcome

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Patients with schizophrenia exhibit about a 1-2SD decline in a range of cognitive domains, e.g. several types of memory, executive function, verbal fluency, and attention/information processing. There is ample evidence for associations between social functioning/community outcome and cognitive disturbances, as evaluated by neuropsychological tests, such as the MATRICS Consensus Cognitive Battery. Therefore, efforts to ameliorate the impairment of cognitive abilities in these patients are needed.

Functional changes in the brain are thought to underlie impaired cognitive performance in schizophrenia. While brain imaging methods, such as functional magnetic resonance imaging and positron emission tomography, are characterized by high spatial resolutions, their time resolutions are limited compared to electroencephalography and magnetoencephalography. Specifically, electrophysiological biomarkers, such as event-related potentials (e.g. P300, mismatch negativity), have been suggested to provide objective indices of cognitive dysfunction in schizophrenia, and be more sensitive to drug-induced changes compared with other functional imaging modalities. Recent development of imaging technique has improved the spatial resolution of ERPs by providing three-dimensional distribution patterns of these electrophysiological activities.

The role for serotonin (5-HT) receptor subtypes in cognitive function has attracted interest, based, partly, on the distinct clinical profiles of second generation (atypical) antipsychotic drugs. In particular, 5-HT_{1A} receptors are located in brain regions related to the pathophysiology of schizophrenia, such as prefrontal cortex, hippocampus, entorhinal cortex, and amygdala. We have reported that psychotropic drugs with high affinity for these receptors improve verbal memory, executive function, and attention/information processing, as well as QOL, and enhance P300 current density in the prefrontal cortex of subjects with schizophrenia. These research directions are likely to facilitate the development of novel therapeutic strategies to improve long-term outcome in people with schizophrenia.

Curriculum Vitae (as of October 2010)

Tomiki Sumiyoshi

Current Employment

2007 – present	Associate Professor, Department of Neuropsychiatry University of Toyama Graduate School of Medicine and Pharmaceutical Sciences,
2009 – present	Clinical Professor, Department of Neuropsychiatry, University of Toyama Hospital

Employment History

1993 - 1995	Research Associate, Department of Psychiatry, Case Western Reserve University (USA) (Rotary International Scholarship)
1995 - 1996	Assistant Professor, Department of Psychiatry, Saitama Medical School
1996 – 2000	Assistant Professor, Department of Neuropsychiatry, Toyama Medical and Pharmaceutical University School of Medicine
2000 – 2007	Senior Lecturer, Department of Neuropsychiatry, Toyama Medical and Pharmaceutical University School of Medicine
2000 – 2002	Visiting Professor, Department of Psychiatry, Vanderbilt University School of Medicine (USA) (Japan Education and Science Ministry Fellowship for Long-Term Research in Foreign Countries)

Education History

1983 - 1989	M.D., Kanazawa University School of Medicine
1989 – 1993	Ph.D., Kanazawa University Graduate Course

Awards

1995 and 2001	NARSAD, Young Investigator Award
2001	American College of Neuropsychopharmacology, Memorial Travel Award
1996	Japanese Society of Biological Psychiatry, Society Award
2008	Japanese Society of Clinical Neuropsychopharmacology, Academic Encouragement Award

Research Interests biological psychiatry, neuropsychopharmacology, cognitive neurosciences

Organization Membership

World Federation of Societies of Biological Psychiatry, Society for Neuroscience, Collegium Internationale Neuro-Psychopharmacologicum, New York Academy of Sciences, Schizophrenia International Research Society, Japanese Society of Biological Psychiatry (councilor), Japanese Society of Neuropsychopharmacology (councilor), Japanese Society of Clinical Neuropsychopharmacology (councilor), Japanese Society of Psychiatry and Neurology (councilor), Japanese Society of Prevention and Early Intervention in Psychiatry (councilor), Japanese Society of Brain Sciences (councilor), Japanese Society of Schizophrenia Research (councilor)