

Psychiatry and Behavioral Sciences

1. Staff members and Students

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| Professor | Toru NISHIKAWA | |
| Associate Professor | Akeo KURUMAJI | |
| Junior Associate Professor | Naoki YAMAMOTO | |
| Assistant Professor | Kazunari OSHIMA, | Takashi TAKEUCHI, |
| | Tomoaki YUKIZANE, | Hidenori ATSUTA(~2010.10), |
| | Hotsumi KYONO(2010.11~), | Masaki NISHIDA, |
| | Kenji NARUSHIMA, | Mitsuhiro TAKEDA, |
| | Akihito UEZATO | |
| Graduate Student | Daisuke JITOKU, | Tomoko TANAKA |
| | Kenji SASAKI, | Takuya YOSHIKE |
| | Sayuri ISHIWATA | |
| Research Student | Megumi GOTO, | Masakazu UMINO |

2. Education

In the first term (two years) of postgraduate training, residents will learn basic laboratory procedures and diagnostic techniques, psychotherapy and drug treatment, and laws and regulations related to clinical practice, and acquire other general knowledge, all being essential for biological, psychological, social, and ethical approaches to neuropsychiatric diseases. Following the two-year period of mandatory clinical training, basic professional training in psychiatry will be provided for 6~9 months mainly in the university. In the second term of training, they will acquire knowledge and clinical experience necessary for neuropsychiatrists, and undergo practical training at affiliated medical facilities to become qualified psychiatrists. Undergraduate education, which places emphasis on clinical clerkship training after a systematic series of lecture course and seminar-based classes, is designed to develop students' problem-solving skills, and increase their motivation to learn neuropsychiatry, with support from external facilities.

3. Research

Our laboratory is committed to comprehensive research on endogenous psychosis, neurosis, and epilepsy through biological, psychological, and social approaches. In collaboration with external research facilities, we are also involved in social psychiatry, child and adolescent psychiatry, and brain imaging studies:

1) Studies in neurochemistry

(i) Molecular genetic studies to clarify the causes and conditions of neuropsychiatric diseases:

Using animal models with psychotic symptom-causing agents, we are involved in a study to isolate new candidate gene clusters associated with the pathogenesis and pathophysiology of neuropsychiatric disorders from the viewpoint of developmental pharmacology. We are examining the effects of candidate gene clusters in patients with neuropsychiatric disorders.

(ii) Studies in pharmacobiochemistry to develop new therapeutic methods for neuropsychiatric disorders:

We are working to examine the pharmacological/biochemical effects of candidate substances to develop new drugs for neuropsychiatric disorders. Extensive research is being conducted to isolate agents associated with the metabolism of D-serine, an endogenous antipsychotic substance, and examine the effects of D-serine on neurotransmission in the brain.

2) Neurophysiological and psychophysiological studies

(i) A study of biological indicators in schizophrenia with eye cameras:

We are not only involved in studies of monozygotic twins, early-onset patients, and children at a high risk in Japan, but also in an international joint research project of the WHO as a center in charge of operations.

(ii) Studies of neurotransmitter receptor binding in neuropsychiatric disorders with PET:

We are working together with the National Institute of Radiological Sciences to investigate the binding activities of dopamine receptors in various brain areas of the patients with schizophrenia and mood disorders.

(iii) A study of sleep stages and behavior in neuropsychiatric diseases:

A study is being carried out to examine sleep stages and behavior using an originally developed automatic analysis device (polysomnography) in patients with various psychiatric disorders.

(iv) A study on brain functioning in psychiatric disorders by using the near-infrared spectroscopy (NIRS): To obtain an insight into biological markers of psychiatric disorders, changes in regional brain functions during psychological tasks are examined by measuring the relative concentrations of oxyhemoglobin using NIRS in combination with MRI in the brain areas of the patients with schizophrenia and mood disorders.

3) Psychopathological studies

We are conducting psychological studies of neuropsychiatric diseases from the aspects of phenomenology, anthropology, and linguistics, while employing a psychotherapeutic approach. Other research activities include a review of basic psychiatric concepts and a basic study for the classification and diagnosis of psychiatric disorders, which are important recent issues. In addition to endogenous psychosis including schizophrenia and manic depressive disorder, we are also involved in psychoanalytic studies of neurosis and borderline personality disorder, which are attracting increasing attention, and psychotherapies for them, as well as pathological research on pathography and art therapy in terms of creativity.

4. Clinical practice

Approximately eighty new outpatients visit our department every month, about 30% of which are classified as having "mood disorders" (F3) by ICD-10, followed by "neurotic, stress-related, and somatoform disorders" (F4) and "schizophrenia, schizophrenic and paranoid disorders" (F2). We are also actively involved in consultation and liaison psychiatry for inpatients in other departments. Patients with senile dementia, child and adolescent psychiatric disorders, substance dependence, and neurosis requiring intensive psychotherapy are often referred to related and advanced facilities for specialized treatment. Since this facility, the psychiatric department of a general hospital, is used for university education and training, most inpatients are classified as F2, followed by F4 and F3 (ICD-10). We also provide care and treatment for patients with sleep rhythm disorders and neurological disorders, including epilepsy and senile dementia. In addition to drug treatment, we have introduced and provided mECT (modified electroconvulsive therapy) for inpatients, and individual and group psychotherapy for the patients in our psychiatric ward and clinic and day care center in close collaboration with rehabilitation facilities in the community. The day care team consists of a doctor, two nurses, and a psycho-social-worker or a clinical psychologist. Day care (partial hospitalization) is the transitional element between inpatient and outpatient care and its indications have a wide range of psychiatric disorders as follows: schizophrenia, depression, bipolar disorder, adjustment disorder and personality disorders. Each member has the own aim and the team gives care with different types of framework. Our day care team regards the potentiality of group very important and the group process could contribute to therapeutic effect. With this kind of experience, patients could develop their ability to communicate with other people and readapt to social situations.

5. Publications (in English)

Original Articles

1. Narushima K, McCormick LM, Yamada T, Thatcher RW, Robinson RG. Subgenual cingulate theta activity predicts treatment response of repetitive transcranial magnetic stimulation in participants with vascular depression. *J Neuropsychiatry Clin Neurosci.* 2010;22(1):75-84.
2. Hiraoka S, Kajii Y, Kuroda Y, Umino A, Nishikawa T. The development- and phencyclidine- regulated induction of synapse-associated protein-97 gene in the rat neocortex. *Eur Neuropsychopharmacol.* 2010;20:176-186
3. Okamoto N, Nakai T, Sakamoto K, Nagafusa Y, Higuchi T, Nishikawa T. Rapid antidepressant effect of ketamine anesthesia during electroconvulsive therapy of treatment-resistant depression-Open-label trial comparing ketamine and propofol anesthesia-. *J ECT.* 2010;26:223-227.
4. Kaji T, Mishima K, Kitamura S, Enomoto M, Nagase Y, Li L, Kaneita Y, Ohida T, Nishikawa T, Uchiyam M. The relationship between late-life depression and life stressors: A large-scale cross-sectional study of a representative sample of the Japanese general population. *Psychiatry and Clinical Neurosciences.* 2010;64:426-434.
5. Oshima K, Okimura T, Yukizane T, Yasumi K, Iwawaki A, Nishikawa T, Hanamura S. Reliability and diagnostic validity for schizophrenia of Japanese version of the Bonn Scale for Assessment of Basic Symptoms (BSABS). *J Med Dent Sci.* 2010;57:83-94.
6. Asukai N, Saito A, Tsuruta N, Kishimoto J, Nishikawa T. Efficacy of exposure therapy for Japanese patients with posttraumatic stress disorder due to mixed traumatic events: A randomized controlled study. *J Trauma Stress.* 2010;23:744-750.
7. Kuroda Y, Motohashi N, Ito H, Ito S, Takano A, Takahashi H, Nishikawa T, Suhara T. Chronic repetitive

- transcranial magnetic stimulation failed to change dopamine synthesis rate: Preliminary L-[b-11C]DOPA positron emission tomography study in patients with depression, *Psychiatry and Clinical Neurosciences*. 2010;64:659-662.
8. Shioiri A, Kurumaji A, Takeuchi T, Matsuda H, Arai H, Nishikawa T. White matter abnormalities as a risk factor for postoperative delirium revealed by diffusion tensor imaging. *Am J Geriatr Psychiatry*. 2010;18:743-753.
 9. Uchida S, Nishida M, Shioda K, Morita Y. Understanding human biological rhythm. Therapeutic principles of bright light and melatonin for sleep disorders of circadian rhythm. *Indian J Sleep Med*. 2010; 5(1):8-12.
 10. Sekine M, Arakawa R, Ito H, Okumura M, Sasaki T, Takahashi H, Takano H, Okubo Y, Halldin C, Suhara T. Norepinephrine transporter occupancy by antidepressant in human brain using positron emission tomography with (S,S)-[18F]FMeNER-D2. *Psychopharmacology (Berl)*. 2010 Jun;210(3):331-336.
 11. Gujar N, McDonald S, Nishida M, Walker MP. A role for REM sleep in (re)calibrating the sensitivity of the human brain to specific emotions. *Cereb Cortex*. 2011;21(1):115-123.