Neurosurgery

1. Staffs and Students (October, 2010)

Professor: Kikuo Ohno
Associate Professor: Masaru Aoyagi
Assistant Professors: Tadashi Nariai, Taketoshi Maehara
Secretary: Mariko Tasumi, Mayako Tokunaga.
Graduate Students: Keigo Shigeta, Tomoaki Okada, Yoshiyuki Matsuoka, Yoshihisa Kawano, Toshiya Momose, Mutsumi Fujii, Shin Hirota, Tomoyuki Kino, Takumi Kudoh, Kotaro Kumagai, Chihiro Hosoda, Mullah Saad Habib-E-Rasul, Tomoyuki Nakamura, Takashi Shigematsu, Atsuko Ishibashi, Ritsu Nishimura

2. Purpose of Education

There are various attracting subjects in the field of clinical or basic research. It is essential to acquire the sufficient knowledge and insight into the pathological conditions as well as normal functions of the central nervous system and spinal cord, which will directly benefit for the improvement of clinical results. Main educational purpose of neurosurgery in the graduate course is to provide students opportunity to acquire the proper technique as well as the broad knowledge, and to nurture the mind of exploration.

In the clinical practice, it is important to attach priority to the patients, considering their background. Also in surgery, it is important to preserve the normal brain functions by employing the cutting edge technique. In the research field, it is essential to introduce and develop the latest knowledge and technology by establishing the reciprocal relationship with the other laboratory institutions.

3. Research Subjects

Brain tumors
1. Analysis of the mechanism of tumor proliferation and infiltration, and its application to treatment
2. Analysis of both proliferative and inhibitory cancer genes in cerebral and spinal tumors
3. Studies of photodynamic therapy, irradiation therapy, agents of chemotherapy, immunotherapy, and inhibition of angiogenesis

Vascular diseases in the central nervous system and spinal cord
1. Analysis of pathogenesis of vasospasm after subarachnoid hemorrhage and its application to treatment
2. Studies of circulatory disturbance in ischemic and hemorrhagic diseases, and reversibility of the brain tissue
3. Investigations of pathology of Moyamoya disease and the effects of indirect surgical anastomosis on this entity
4. Solutions of problems in the development of endovascular surgery

Neurotrauma
1. Analysis of cell damage and its reversibility, dynamic simulation in cerebrospinal injury
2. Animal experiments concerning treatment of cerebrospinal injury

Functional neurosurgery
1. Pathological analysis and treatment of temporal lobe epilepsy
2. Analysis of intracellular signal transductions

Others
1. Studies of human cerebral circulation, metabolism, and functions using PET, MRI/S, and MEG
2. Studies of receptors in the central nervous system using PET
3. Experiments of brain diseases using animal model MRI and PET

4. Clinical services
Neurosurgery is a clinical department dealing with various diseases of central nervous system and spinal cord including tumors, vascular diseases, trauma, congenital malformation, functional disorders, and infection.

5. Publications
Original Articles