

Diagnostic Radiology and Oncology

1. Staff and Students (2009)

Professor	Hitoshi Shibuya	
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	Keiko Nakagawa(Apr.~)	Ken Takahashi(Apr.~Aug.)
Graduate Students	Youichi Machida,	Satoko Arai,
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Research Students	Kiyomi Amemiya and Yoshiaki Katada(~Sep.)	

2. Purpose of Education

The Diagnostic Radiology and Oncology section covers the fields of diagnostic radiology, nuclear medicine, radiation oncology and biology, and radiation physics. The objectives of our institution of the graduate course are to study radiological medicine from the area of human anatomy and pathology, physiology, and clinical medicine. Our section is composed of over 70 members; about 45 of them are serving as heads or rotating staff members of general hospitals in the metropolitan area and approximately another 20 of them are studying and working as members of the university and/or university hospital staff. Postgraduate courses are made to study basic/clinical radiation medicine in order to obtain license as a specialist from the Japan Radiological Society (JRS). JRS specialist licenses are granted in two fields: diagnostic radiology and radiation oncology. Doctors of our section are also expected to obtain PH.D. and 34 students had obtained a degree of PH.D. under the guidance of Prof. Shibuya and staff.

3. Clinical Services and Research Subjects

A. Diagnostic Radiology

CT section:

After the introduction of two sets of multi-slice CT machines (MDCT: 64 arrays), number of patients examined has been markedly increased, and MDCT has enabled CT angiography of coronary artery as well as the cerebral artery. MDCT has offered a chance of on the day examination and early image diagnosis of disease. The clinical CT studies for liver diseases have offered the chance to get doctor degree for three doctors.

MRI section:

Three sets high speed MRI (1.5T and 3T) are enable to detect early findings of cerebral infarction by DWI (diffusion weighted image). Calculation of apparent diffusion coefficients (ADCs) of the kidney and liver has provided data for studying the physiology and pathology of these parenchymatous organs.

Interventional Radiology:

TAE (trans-catheter arterial embolization) for liver cell carcinoma and PTA (percutaneous trans-catheter angioplasty) for peripheral arterial occlusive disease have been routinely done to-date. Emergency angiography can be carried out at any time at any time as occasion calls.

Ultrasonography:

Breast disease and soft tissue ultrasonography is performed in the radiological center. Combined ultrasonography and MRI examinations have provided precise information for the diagnosis and treatment of breast cancer.

B. Nuclear Medicine

On Nov. 2006, two sets of PET/CT examination have been introduced and started operation. About 15 patients a day are examined using ¹⁸F-FDG/CT. SPECT examinations have been performed in about 10 cases of disease every day. Clinical data obtained in the diagnosis of head and neck and breast cancer have offered the chance to study pathology of head/neck cancer and breast cancer..

C. Radiation Oncology

Low-dose rate brachytherapy for head/neck as well as prostate cancer is a unique character of the radiation oncology section. The 720 new patients referred for radiotherapy in 2009 included 250 cases of head and neck cancer patients, 120 prostate cancer patients and 110 breast cancer patients. Over 140 oral/oropharynx cancer patients were treated by brachytherapy in 2009. The results of brachytherapy were compatible to the results obtained by surgery, and post-treatment quality of life was better than after surgery.

We are now conducting gene analyses of oral cancers, and comparisons between tumor gene expression and the results of treatment are providing new information in regard to the treatment of head and neck cancers.

We are now renewing Linear accelerating machines this year, and we have to have three Linear accelerating machines equipped IMRT function at the end of this year.

4. Manuscript

1. Yoshimura R, Shibuya H, Miura M, Watanabe H, Ayukawa F, Hayashi K, Toda K. Quality of life of oral cancer patients after low-dose-rate interstitial brachytherapy. *Int J Radiat Biol Phys* 73: 772-778, 2009.
2. Toda K, Shibuya H, Hayashi K, Ayukawa F. Radiation-induced cancer after radiotherapy for non-Hodgkin's lymphoma of the head and neck: a retrospective study. *Radiat Oncol.* 2009;4:21.
3. Hayashi K, Hatsuno K, Yoshimura R, Iida T, Ayukawa F, Toda K, Taniguchi H, Shibuya H. Electron therapy for orbital and periorbital lesions using customized lead eye shields. *Ophthalmologica.* 2009;223(2):96-101.
4. Kurata A, Murata Y, Kubota K, Osanai T, Shibuya H. Multiple (18)F-FDG, PET-CT for postoperative monitoring of breast cancer patients. *Acta Radiol.* 2009 Nov;50(9):979-83.
5. Toriihara A, Seto Y, Yoshida K, Umehara I, Nakagawa T, Ren L, Iwamoto I. F-18 FDG PET/CT of polymyalgia rheumatica. *Clin Nucl Med* 34: 305-306, 2009.
6. Yamada I, Takeshita K, Saito N, Yoshino N, Tetsumura A, Kumagai J, Shibuya H. Evaluation of gastric cancer by high-resolution three-dimensional CISS MR imaging in vitro. *Clin Imaging* 2009; 33(5): 354-360.
7. Tezuka M, Hayashi K, Okada Y, Irie T, Ina H. Therapeutic results of computed-tomography-guided transcatheter arterial chemoembolization for local recurrence of hepatocellular carcinoma after initial transcatheter arterial chemoembolization: The results of 85 recurrent tumors in 35 patients. *Dig Dis Sci* 54:661-669, 2009.
8. Katada Y, Isogai J, Ina H, Tezuka M, Umehara I, Shibuya H. Potential extraperitoneal space continuous with the peritoneal space: CT evidence and anatomical evaluation in patients with pneumatosis intestinalis without intestinal ischemia. *Surg Radiol Anat* 2009;31:707-713.
9. Katada Y, Umehara I, Ohki T, Kishino M, Shibuya H. Bilateral renal angiomyolipoma in patient with tuberous sclerosis treated with resection of one kidney and transarterial embolization of other kidney using CT during selective arteriography: a case report. *Cases J* 2009;2:6351.
10. Yoshio Kitazume, Shiro Satoh, Shinichi Taura, Yuji Kimura. Diffusion-Weighted Magnetic Resonance Imaging Detection of Renal Cancer Presenting With Diffuse Peritoneal Metastases in a Patient with Hemodialysis-Associated Acquired Cystic Disease of the Kidney. *J Magn Reson Imaging.* 2009 Apr; 29(4): 253-6.
11. Tanaka R, Ibukuro K, Abe S, Tobe K, Fukuda H, Kondou Y, Tagawa K. Treatment of hepatic encephalopathy due to inferior mesenteric vein/inferior vena cava and gonadal vein shunt using dual balloon-occluded retrograde transvenous obliteration. *Cardiovasc Intervent Radiol.* 2009 Mar;32(2):390-3. Epub 2008 Oct 7.
12. Ibukuro K, Kojima K, Kigawa I, Tanaka R, Fukuda H, Abe S, Tobe K, Tagawa K. Embolization of rectal varices via a paraumbilical vein with an abdominal wall approach in a patient with massive ascites. *J Vasc Interv Radiol.* 2009 Sep;20(9):1259-61.
13. Ibukuro K, Tanaka R, Takeguchi T, Fukuda H, Abe S, Tobe K. Air embolism and needle track implantation complicating CT-guided percutaneous thoracic biopsy: single-institution experience. *AJR Am J Roentgenol.* 2009 Nov;193(5):W430-6.
14. Numasaki H, Teshima T, Shibuya H, Nishio M, Ikeda H, Ito H, Sekiguchi K, Kamikonya N, Koizumi M, Tago M, Nagata Y, Masaki H, Nishimura T, Yamada S; Japanese Society of Therapeutic Radiology and Oncology Database Committee. National structure of radiation oncology in Japan with special reference to designated cancer care hospitals. *Int J Clin Oncol.* 2009 Jun;14(3):237-44.
15. Tanaka K, Akiyama F, Nishikawa N, Kimura K, Gomi N, Oda K, Iwase T. Invasive carcinoma of the breast accompanied by coarse calcification. *AJR* 193 W70-71 2009.

5. Congress

1. Shibuya H. Keynote lecture: Brachytherapy in head & neck cancer. 25 th annual meeting on Korean Head and Neck Oncology (KSHNO) at Seoul, Nov. 20, 2009.
2. Yoshimura R, Kagami Y, Ito Y, Okamoto H, Sumi M, Mayahara H, Murakami N, Morota M, Itami J. Oral ulcer after intensity-modulated radiotherapy for head and neck cancer. 51th ASTRO Annual Meeting. 1-5 Nov 2009 Chicago, USA.
3. Yasumoto M, Katada Y, Matumoto R. MR anatomy of eyelids and MR imaging of diseases of eyelids. 95th Scientific Assembly and Annual Meeting of the Radiological Society of North America (RSNA). 29 Nov-4 Dec 2009 Chicago, USA.
4. J. Isogai, M. Miyazaki, T. Shimada, H. Hatakeyama, T. Yamada, M. Takeuchi, S. Maejima, K. Yodo, and T. Miyata: Non-contrast MRA of the finger and toe using time-spatial labeling inversion pulse (time-SLIP) technique; ECR, Vienna, March 2009.
5. J. Isogai, J. Kaneko, S. Maejima: Transdiaphragmatic decompression pathways of pneumomediastinum and pneumoretroperitoneum; ECR, Vienna, March 2009.
6. J. Isogai, M. Miyazaki, T. Shimada, H. Hatakeyama, T. Yamada, M. Takeuchi, S. Maejima, K. Yodo, and T. Miyata: Nonenhanced MR Angiography of the Femoral Head using Time-SLIP; ISMRM, Honolulu, April 2009.
7. Nakagawa T, Ryu Y, Nakadate M, Umehara I. Predicting Response of Colorectal Hepatic Metastasis: Value of Pretreatment Rim Attenuation; European Congress of Radiology (ECR), 6-10 March 2009 Vienna, Austria.
8. Nakagawa T, Ichikawa D, Watanabe T. PTA of Native AVF: Effect of Residual Stenosis on Patency Survival Rate; 6th International Congress of Vascular Access Society, 20-22 April 2009 Roma, Italy.
9. Nakagawa T, Ryu Y, Nakadate M, Yamada M, Suzuki Y, Umehara I. Resection of Colorectal Liver Metastases: Prognostic Value of Rim Attenuation of Preoperative MDCT; World Conference on Interventional Oncology, 25-28 June 2009 Beijing, China.
10. Nakagawa T, Tanaka N, Tanoue Y, Ryu Y, Nakadate M, Harata N, Yamada M, Suzuki Y, Umehara I. MDCT of Small Bowel Obstruction: CT Ischemic Score Predicting Bowel Necrosis; Annual Scientific Meeting of the American Society of Emergency Radiology, 30 Sep-3 Oct 2009, Orlando, USA.
11. N.Gomi, A.Kohno, Y.Yamamoto Evaluation of neoadjuvant chemotherapeutic effects of breast cancer by MRI: Accuracy of MRI in predicting pathologic complete response. European Congress of Radiology 3月6-10 2009 Viena, Austria.
12. Fukuda T, Gomi N, Miyagi Y, Tokudome N, Takahashi S, Ito Y, Iwase T, Akiyama F. Evaluation of neoadjuvant chemotherapeutic effects of breast cancer by MRI: Accuracy of MRI in predicting pathologic complete response. 32nd Annual San Antonio Breast Cancer Symposium 12月9-13 2009 San Antonio, USA.