

## Department of Radiology

---

Hiroya Ojiri, *Professor*  
 Shunichi Sadaoka, *Professor*  
 Mayuki Uchiyama, *Professor*  
 Yoshimitsu Sunagawa, *Associate Professor*  
 Keiko Toyoda, *Associate Professor*  
 Toru Sakuma, *Associate Professor*  
 Go Kawakami, *Assistant Professor*  
 Hirokazu Saigusa, *Assistant Professor*

Hiroshi Sekine, *Professor*  
 Manabu Aoki, *Professor*  
 Norio Nakata, *Associate Professor*  
 Koushi Ikeda, *Associate Professor*  
 Satoshi Tatsuno, *Associate Professor*  
 Masao Kobayashi, *Assistant Professor*  
 Satoshi Matsushima, *Assistant Professor*  
 Takao Igarashi, *Assistant Professor*

### Research Activities

#### *Division of diagnostic imaging*

1. A study of enhancement patterns of glioblastomas on contrast-enhanced magnetic resonance imaging

Glioblastomas frequently present with a ring enhancement on contrast-enhanced magnetic resonance imaging (MRI). However, it can present with varying patterns of enhancement. Therefore, we investigated whether any enhancement pattern has not been previously reported. In this study, a new contrast pattern was identified in several cases.

2. Imaging features of cystic neck lesions: cystic lymph node metastasis from human papillomavirus-positive oropharyngeal cancer, the second branchial cyst, and tuberculous lymphadenitis

Human papillomavirus-positive oropharyngeal cancer is frequently associated with cystic lymph node metastasis. We evaluated differences in imaging features among cystic lymph node metastasis from human papillomavirus-positive oropharyngeal cancer and 2 nonmalignant cystic neck lesions, the second branchial cyst, and tuberculous lymphadenitis.

3. To determine the clinical and characteristic computed tomographic findings of airspace enlargement with fibrosis

Eight hundred patients with chronic obstructive pulmonary disease were evaluated retrospectively with inspiratory and expiratory computed tomographic (CT) scans. Nine patients had multiple cysts that were significantly decreased in size and were probably corresponding to airspace enlargement with fibrosis.

4. Cardiac CT as a viable alternative to echocardiography to detect vegetations and perivalvular complications in patients with infective endocarditis

We considered CT as a possible alternative to echocardiography for assessing infective endocarditis. We evaluated the diagnostic capability of preoperative CT.

5. MRI findings of ovarian mucinous tumors with mural nodules

We evaluated 3 cases of mucinous tumors with mural nodules, which could be malignant. Mural nodules in multilocular cystic ovarian tumors might be significant to identify.

6. Preoperative MRI with full diagnostic protocols

Preoperative MRI is more accurate with full diagnostic protocols than with abbreviated protocols alone for estimating tumor extent in patients with pure ductal carcinoma in situ. The presence of B3 lesions, low-grade ductal carcinoma in situ, and moderate/marked background parenchymal enhancement lowered the rate of concordance between MRI

and pathology.

7. Study of quantification of rheumatoid arthritis using dual-energy CT

We will examine the usefulness of dual-energy CT quantitative evaluation in the activity of rheumatoid arthritis compared with semiquantitative evaluation by contrast-enhanced MRI.

8. The anatomical evaluation of the findings of dual-energy CT of psoriatic arthritis using a normal cadaver finger

We compare dual-energy CT indine mapping findings of psoriatic arthritis with high-resolution MRI imaging and macroscopic appearance of a normal cadaver finger.

*Division of Nuclear Medicine*

Relapse-free survival after adjuvant radioactive iodine therapy in patients with differentiated thyroid carcinoma with a microscopically positive tumor margin

Thyroid carcinoma recurred in 52.9% of patients in the low-dose (1110 MBq) group and 22.5% of patients in the high-dose (3700 MBq) group. The most common type of recurrence was lymph node metastasis.

*Division of Interventional Radiology*

1. Evaluation of the efficacy of radiotherapy with super-selective cisplatin arterial infusion for maxillary sinus cancer

Although maxillary sinus carcinoma is rare, it is often detected at an advanced stage owing to the lack of clinical symptoms at an early stage. The treatment of advanced maxillary sinus cancer is usually surgical resection; however, surgery has many complications, such as facial deformity, removal of the eye, and severe functional impairment. For carcinoma of the T4b stage, surgery is not indicated and systemic chemotherapy combined with radiotherapy is the standard treatment; however, the treatment effect is not satisfactory. Our division started performing radiotherapy with super-selective cisplatin arterial infusion in 2016, with a number of cases.

In particular, our research focuses on preoperative imaging, complications of this type of radiology, and indicators of treatment effects.

2. Detection of the cystic artery using an automated tumor-feeder detection software

We evaluated cystic artery detectability with an automated tumor-feeder detection software program and cone-beam CT.

*Division of Radiation Therapy*

1. To clarify the optimum fractionated radiotherapy of cancer with nonuniform radiosensitivity using the general linear quadratic model

The number of tumor cells before radiotherapy is important for local control after radiotherapy. Therefore, the number of tumor cells per unit volume was measured in surgically treated cases of breast cancer. Given nonuniform radiosensitivity to the model tumors, estimate local control rate by the general linear quadratic model.

2. Dose findings and confirmatory trial of superselective intra-arterial infusion of cisplatin and concomitant radiotherapy for patients with locally advanced maxillary sinus cancer

We have started new concept research and evaluate local control for more advanced local tumors, normal-tissue conservation rates, and late complications.

### Publications

**Baba A, Ojiri H, Ogane S, Hashimoto K, Inoue T, Takagiwa M, Goto TK.** Usefulness of contrast-enhanced CT in the evaluation of depth of invasion in oral tongue squamous cell carcinoma: comparison with MRI. *Oral Radiol.* 2020 Feb 21. doi: 10.1007/s11282-020-00429-y. Epub ahead of print. PMID: 32086730.

**Shiraishi M, Igarashi T, Terayama T, Watanabe K, Ashida H, Ojiri H.** Breast magnetic resonance imaging for estimation of the tumour extent in patients with pure ductal carcinoma in situ: Comparison between full diagnostic and abbreviated protocols. *Eur J Radiol.* 2020 Feb; **123**: 108788. doi: 10.1016/j.ejrad.2019.108788. Epub 2019 Dec 18. PMID: 31874302.

**Baba A, Okuyama Y, Yamauchi H, Ikeda K, Ogino N, Kozakai A, Suzuki T, Saito H, Ogane S, Yamazoe S, Mogami T, Ojiri H.** Magnetic resonance imaging findings of styloglossus and hyoglossus muscle invasion: Relationship to depth of invasion and clinical significance as a predictor of advisability of elective neck dissection in node negative oral tongue cancer. *Eur J Radiol.* 2019 Sep; **118**: 19-24. doi: 10.1016/j.ejrad.2019.06.023. Epub 2019 Jun 26. PMID: 31439241.

**Matsushima S, Shimizu T, Fukasawa N, Ojiri H.** Novel Characteristic Skull Magnetic Resonance Imaging Features Associated With Meningioma. *J Comput Assist Tomogr.* 2019 Sep/Oct; **43**(5): 708-712. doi: 10.1097/RCT.0000000000000900. PMID: 31356523.

**Ohki K, Igarashi T, Ashida H, Shiraishi M, Nozawa Y, Ojiri H.** Differentiation between non-hypervascular pancreatic neuroendocrine tumour and pancreatic ductal adenocarcinoma on dynamic computed tomography and non-enhanced magnetic resonance imaging. *Pol J Radiol.* 2019 Mar 13; **84**: e153-e161. doi: 10.5114/pjr.2019.84193. PMID: 31019610; PMCID: PMC6479137.

**Baba A, Ojiri H, Minami M, Hiyama T, Matsuki M, Goto TK, Tatsuno S, Hashimoto K, Okuyama Y, Ogino N, Yamauchi H, Mogami T.** Desmoplastic ameloblastoma of the jaw: CT and MR imaging findings. *Oral Radiol.* 2020 Jan; **36**(1): 100-106. doi: 10.1007/s11282-019-00385-2. Epub 2019 Apr 2. PMID: 30941567.

**Morikawa K, Misumi S, Fukuda T, Ojiri H, Matsudaira H, Sato S.** Pulmonary sclerosing pneumocytoma presenting as slow-growing multiple nodules over a long period. *Radiol Case Rep.* 2019 Mar 7; **14**(5): 602-607. doi: 10.1016/j.radcr.2019.02.024. PMID: 30891111; PMCID: PMC6407144.

**Morikawa K, Igarashi T, Misumi S, Fukuda T, Ojiri H, Matsudaira H, Shiba H, Sato S.** A case of pseudocystic liver metastases from an atypical lung carcinoid tumor. *Radiol Case Rep.* 2019 Mar 6; **14**(5): 595-601. doi: 10.1016/j.radcr.2019.02.022. PMID: 30891110; PMCID: PMC6406078.