Diagnostic Radiology

Introduction

The Division of Diagnostic Radiology is committed to improving health through excellence in image oriented patient care and research.

Our Division performs more than 64,000 inpatient and outpatient procedures annually.

The division also conducts clinical scientific researches, as well as basic scientific ones. And the results translate directly into better patient care.

Routine Activities

Our division has four helical CT scanners including two multi-slice CT scanners, two 1.5T MRI systems, two interventional radiology (IVR) CT systems, two gamma cameras with the capacity for single photon emission CT (SPECT), two digital radiographic (DR) systems for fluoroscopy, two mammography and four computed radiographic (CR) systems. IVR-CT system means digital subtraction angiography with helical CT. One IVR-CT system is equipped with 16 multi-slice CT. Positron emission tomography (PET) scanner and baby cyclotron had been introduced, and tumor imaging by 18F-FDG (fluorodeoxyglucose) has been performed. These all-digital image systems enhance the efficacy of routine examination.

This division has seven consulting radiologists and fourteen technologists. As part of routine work, every effort is made to produce an integrated report covering all examinations, such as plain radiographic examinations (chest, abdomen, head, neck, breast, bone and other structures), contrast radiological procedures (digestive, urinary and respiratory tracts), CT, MRI, RI, PET, angiography and interventional radiology (IVR), mainly transarterial embolization (TAE).

The number of cases examined in 2004 is shown in the table below.

A new computer-aided diagnosis (CAD) system using FCR (Fuji Computed Radiography) mammograms was introduced to study computerized detection for breast cancerous mass and microcalcifications. Sensitivity to breast cancerous mass and microcalcifications were 91% and 96%, respectively. False-positive rates were 0.3 and 0.2 per image, respectively.

Also another CAD system for lung cancer using multi-slice helical CT images is being developed. These CAD systems promise to have a great influence on cancer diagnosis as well as on patient care in the near future.

FDG-PET imaging is useful to detect metastasis and recurrence that are not detected by CT in patient with high level of tumor marker, and also to detect mediastinal lymph node metastasis in lung cancer. Furthermore, we have performed the study of PET-CT which combined two imaging modalities. PET images provide very sensitive information regardless of whether a mass is cancerous or not. And CT images provide detailed information about the various lesions. The PET-CT merges PET and CT images together. Especially FDG-PET and abdominal CTA were performed in consecutive 21 patients with colorectal cancer, 7 patients with pancreatic tumors for preoperative evaluation. All tumor were clearly depicted on PET-CTA, and feeder arteries were identified in all cases of colorectal cancer. Lymph node metastases also could be demonstrated in 3 cases of colorectal cancer. For pancreatic cancer which is known as hypovascular malignant tumor, PET-CTA could not show feeder artery but depict adjacent vasculature with good spatial correlation with the tumor. Main trunk and 1st to 2nd branch of superior mesenteric artery could be demonstrated in this study. In addition, efficacy as navigation image for assisting endoscopic surgery may be possible by displaying 3D-images from the same angle with laparoscopy.

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