

499

MRI IN BONE DISEASE AND SOFT
TISSUE DISEASE.

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MRI was performed on the patients with
bone disease and soft tissue disease, and
we evaluated extensive or differential
diagnosis and compared conventional method.

MR is 0.35 Tesla superconductive magnet
coil (MAGNETOM) and its imaging method is 2D
Fourier transformation method. Our imaging
technique is Spin Echo (SE), and we used the
surface coil in some cases.

Subjects are 17 patients, osteosarcoma 4 cases,
osteonecrosis of femur head 2 cases, vertebral
hemangioma 1 case, thyroid tumor 1 case...

MRI of bone tumor is useful in evaluating
the extent of the soft tissue mass, and the
high contrast between marrow fat and tumor
is helpful in evaluating the spread of disease
in the bone marrow. MRI is useful in earlier
diagnosis of ischemic dead bone. Surface
coil imaging has high resolution contrast.

500

The Clinical Application of NMR-CT to Renal
Masses.

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The nuclear magnetic resonance (NMR)
imaging of the renal mass lesions was performed
in 25 subjects: 16 renal cell carcinoma; 3
angiomyolipoma; 1 metastatic renal tumor;
3 renal cystic lesion and 2 other diseases.
NMR imaging was obtained on Toshiba NMR-CT
Model 15A with 0.15 Tesla resistive type magnet
using a variety of saturation recovery (SR) and
inversion recovery (IR) imaging techniques and
compared with X-ray CT findings. Renal cell carcinoma
which had higher or lower intensity than normal
kidney and the clear image of tumor thrombus
into vena cava using SR technique were demonstrated.
In typical angiomyolipoma specific short T1
which suggested fat tissue was recognized. The
superior capability of NMR image in soft tissue
characterization allowed differentiation of the
angiomyolipoma from renal cell carcinoma. In the
near future, when larger numbers of patients are
imaged and discussed, NMR will assume a role in
the clinical evaluation of renal masses.

501

MAGNETIC RESONANCE IMAGING OF LUNG TUMORS
AND ENLARGED MEDIASTINAL LYMPH NODES.

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Seventeen patients with primary and metastatic
lung cancer were studied with magnetic resonance
imaging (MRI). And we have compared the MR
images of their tumors and enlarged mediastinal
lymph nodes with those of computed tomography
images (CT).

The pulse sequences of MRI were the spin-echo
technique with TR values of 400 msec and TE
values of 40 msec, providing good tissue contrasts
on the region of lung and mediastinum.

All of the tumors larger than 1 cm in diameter
on CT were shown on MRI. The dimension of the
tumors delineated by MRI were corresponding to
those of CT on displaying conditions of window
2000, level -500. However MRI produced slightly
larger dimensions than CT on displaying conditions
of window 500, level 0 in most of the cases. All
of the enlarged lymph nodes visualized by CT
(7 cases, 16 nodes, 10-50 mm in diameter) were
also shown on MRI.

502

CLINICAL EXPERIENCES OF IMAGING FOR THE
PELVIS WITH UROLOGICAL AND GYNECOLOGICAL
DISEASES.

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A NMR-machine with a superconductive magnet
of 0.256 Tesla was installed at the Chiba
University in April 1984. Thirty-five patients
with a variety of urological and gynecological
disease in the pelvis have been taken by the
NMR-machine since then, subjected to the clinical
evaluation of NMR images. For imaging method
and pulse sequences used on the patients, spin-echo
(SE) with multi-slice technique was performed
at fast, long SE imaging as T2 enhanced images
and short SE imaging as T1 enhanced images,
moreover inversion recovery (IR) imaging as T1
enhanced images were properly added on selected
slices. Direct sagittal and coronal images could
often take more useful informations concerning
three dimensional anatomical localization of the
lesion. The locations and extends of the cancers
of cervix, endometrium, bladder and ovary were
well demonstrated on almost cases with high
intensity signals by means of T2 enhanced images.
The lesions of prostate cancer, invasive mole,
myoma and ovarian cyst were visualized as
abnormal mass with a variety of signal intensities,
well defined from normal structure of pelvis in
most cases.