MAGNETIC RESONANCE IMAGING OF THE LUNG TUMORS: DIFFERENCE OF THE IMAGES WITH THE VARIABLE PULSE SEQUENCES AND IN VIVO T1 AND T2 CALCULATIONS.

To evaluate the tissue contrasts of tumor/fat and tumor/muscle, magnetic resonance imaging (MRI) of 20 patients with lung cancers were performed with the sequences of Short SE(TE 40 msec, TR 400 msec), Long SE(TE 80-120, TR 1500-2000) and IR(TE 40, TI 400-500, TR 1500-2000). And T1 and T2 calculations were performed in 11 of those cases. T1 images were calculated from IR images and SE images, and T2 images from short TR-SE images and long TR-SE images by the two-point method. As a result, Short SE images provided good tissue contrasts in separating tumors from fat and Long SE images provided good in separating tumors from muscle. The tumors in seven cases had very low signal intensities on IR images and could not be detected. The computed T1/T2 of skeletal muscles, subcutaneous fatty tissues, and tumors were 320±855(msec)/-448±293±30/70±7.5, and 530±156/79±18 respectively. And T1/T2 of the tumors had the correlation of (T1)=7.9 (T2)=97, r=0.90, p 0.01. In conclusion, tumors, fat and muscle were clearly separated by their T1 and T2, and the correlation of the tumors' T1 and T2 suggestively showed their character or the status of their degeneration.

THE TRIAL FOR ESTIMATION OF CARDIAC FUNCTION EMPLOYING MRI.
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MRI provides non-invasively the clear images of the wall of the left ventricle (L.V.) without any contrast agents.

With MRI employing the cardiac gating system, we estimated the volume and the ejection fraction (E.F.) of the L.V. of volunteer based on an oblique imaging technique.

We obtain the long-axial image of the L.V. at end diastolic and endsystolic phase in ECG respectively, then measure the length and the area in the long-axial image of the L.V.

The E.F. is calculated from the EDV and the ESV by using the ellipsoid-single plane method.

Finally, we compare the E.F. from MRI to that from UCG.

MAGNETIC RESONANCE IMAGING OF THE TRANSPLANTED KIDNEY.
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Magnetic resonance imaging was performed on patient with transplantation of kidney. Imaging was done using a 0.1 Tesla resistive MR imaging unit using inversion recovery(IR): TR, 1000 msec; inversion time (TI), 400 msec and TI image. Fifteen patient were studied: good function seven, acute rejection two, chronic rejection six. The corticomedullary differentiation(CMD) was seen on good function(6/7), not seen on rejection(6/9). The TI value of the cortex and medulla on good function transplanted kidney were 400-430 msec and 480-540 msec. The TI value on acute and chronic rejection was wide spread: 430-620 msec. The CMD on IR image is the good sign for rejection reaction. The TI value of the transplanted kidney was not good for rejection reaction.