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THE STUDY OF NMR IMAGING IN ANIMAL MODEL.
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These animal models were produced for dynamic function study of kidney by NMR renogram with Gd-DTPA which is contrast enhansment agent for NMR imaging.

The animals used that left ureter occlsion ,right renal artery stenosis and hazard by cisplatin of rabbit.

The determination of spin relaxation time (Tl) were measured using Asahi Mark-J(0.1T resonance frequency for hydrogen of 4.5MHz, the receiver coil was 24cm in diameter.

These results, in the nomal kidney Gd-DTPA was 50% decay abaut 20 min. and 90% decay abaut 90 min. ,after administration of dose. On the other hand in the desease kidney decay curves were shows differents then nomal kidney. thats in the ureter occlusion model shows correction of Gd-DTPA is long time and in the lenal artery stenosis model shows excretion was very slow to kidney from blood vessel, and in the ciplatin administreted rabbit was not excrete of Gd-DTPA.

We confirmd these examination animal dsease model are usful for dinamic function study by NMR-renogram with Gd-DTPA.

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THE EFFECT OF CONTRAST ENHANCEMENT IN RABBIT TUMORE BY GD-DTPA ON MRI.
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Magnetic resonance imaging was performed on rabbits with VX-2 tumors, before and after intravenous administration of gadolinium-DTPA(Gd-DTPA) MR images were obtained with a VISTA-MR (Picker),superconducting magnet system operating at 0.26 Tesla.Contrast-enhanced CT of tumors were performed to compare with MRI.The IR(1500/500/40) image and SE (300/24)imge were obtained,before and after Gd-DTPA.The capsule of VX-2 tumor intensity was increase not only on MRI but on X-CT.The intensity of necrosis was increase very slowly on MRI.
After Gd-DTPA IR images had good contrast between necrosis and not.
We thought Gd-DTPA was good contrast agent for MRI.

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NMR:T1,T2-SENSITIVITY MAP OF SIGNAL INTENSITY TO DIAGNOSIS OF NMR-CT
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In this study, we prepared T1,T2-sensitivity (total relaxation sensitivity) map as a means of presentation of the correlation between T1,T2 change and signal intensity change of various tissues. Ratio between fractional rate changes of each relaxation time against entire relaxation time and those of signal intensity against entire signal intensity, are measured respectively by means of logarithmic differentiation, by which the sensitivity of each T1 and T2 was calculated. The summation of respective relaxation sensitivity was disignated as total relaxation sensitivity;(S.total). The resulting S.total is classified into seven different color indics according to its value. The classified S.total are plotted on T1 axis and T2 axis.
The classified S.total express generally the degree of dependence of respective relaxation time and we discuss about the precaution and limitation of T1,T2-sensitivity map application.

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IN VIVO MRI AND P-31 NMR SPECTROSCOPY IN EXPERIMENTAL HEAD INJURY.
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The pathophysiological consequences immediately after head injury are complicated. The accurate assessment of brain damage is indispensable in the management of head injury victims, though methodologically difficult in clinical settings.

We used in vivo MRI (resistive, 0.35T) and P-31 NMR spectroscopy (5.6T) to evaluate the development of brain edema and the changes in brain phosphorus metabolism following mechanical head trauma in the rat. MRI 2 hours after injury readily demonstrated brain edema as high signal intensity region at the impacted cortex (spin echo pulse sequence, TR 2sec, TE 28msec). P-31 NMR spectroscopy showed the decrease of the PCr/Pi ratio and lower intracellular pH according to the magnitude of the impact pressure.

We conclude that NMR techniques will be of quite use in the diagnosis and management of brain edema and cerebral metabolic deterioration associated with mechanical head injury.