The purpose of this paper is the comparison of two machines in the diagnosis of myocardial infarction (MI) and hypertrophic cardiomyopathy (HCM). We used a 0.35 T MR machine last year, and we have been using 1.5 T MR machine since this March. The advantage of our 0.35 T machine is in the capability of shortening of scan time and taking oblique images. The patient population is 3 vs 10 of MI. 8 vs 4 of HCM. (The former is patient by 0.35 T one.) The lesion of recent MI is shown as prolonged T2 relaxation time by two machines. T2 relaxation time of various sites of LV wall in the patients with HCM is no significant difference. T2 relaxation time of each area of recent MI, non-infarcted myocardium and the myocardium of HCM by 0.35 T one was 51.7, 40.3, 41.7 msec and those by 1.5 T machine was 42.9, 30.4, 32.0 msec. The difference of T2 relaxation time between two machines is significant, but in phantom study T2 relaxation time between two machines is almost the same. We consider the major cause of this difference is due to the inhomogeneity of RF in patient's body, and the iron in the myocardium.

Patients with muscle diseases have been examined by 31P-NMR spectroscopy using a superconductive MR system operating at 1.5 T (MAGNETOM, Siemens).

Significant changes have been observed in the PCR/PI ratio and pH in the spectra of the femoral muscle of some of the patients measured before and after exercise. Depending on the kind or the stage of the disease, the recovery process after exercise has been found to be distinctly different. In cases who are from the deficiency of certain enzymes, the change of the PCR/PI ratio with time reflects the recovery of the muscle from exercise. On the other hand, muscle has no abnormality in the muscle itself, but instead a disease of the neuromuscular junction.

In vivo 31P-spectroscopy may therefore open the way to quantitative evaluation of the stage of such diseases and the effect of treatment.