BASIC STUDIES ON BONE MARROW DISEASES USING NMR. A. Muranaka, J. Saito and Y. Ito. Division of Nuclear Medicine, Kawasaki Medical School and Department of Nuclear Medicine, Fukushima Medical School. Kurashiki and Fukushima.

In order to know usefulness of NMR imaging in bone marrow diseases, $T_1$ and $T_2$ in intramedullary transplanted VX-2-rabbits were measured. And also, the effects of blood loss and administration of anticancer agents on $T_1$ and $T_2$ values were studied. The apparatus used was XL-200 superconducting FT NMR spectrometer system (Varian, Field strength: 47 KG, $^1$H at 200 MHz). The specimens were inserted in test tubes 5 mm in diameter. Proton-NMR spectra in normal bone marrow tissues separated into two peaks originated from $H_2O$ and $CH_2$-chains. $T_1$ and $T_2$ values in two peaks were markedly different. Content of fatty marrow was variable in individuality and localization. These anatomical and biochemical features suggest us the necessity to evaluate $T_1$ and $T_2$ in each peak separately for the construction of NMR images. As for $T_1$ and $T_2$ in $H_2O$-peaks, $T_1$ in VX-2 was about 1.3 times as much as that of normal bone marrow tissues, while $T_2$ was about 1.7 times. Blood loss (stimulation) and administration of Mitomycin C (suppression) affected $T_1$ and $T_2$ in bone marrow. Namely, these procedures caused increases of $T_1$ and $T_2$ values and the values were between the ranges of normal marrow and tumor. NMR-CT might be extremely valuable for diagnostic imaging supported by pathological and biochemical standpoints.