INTRODUCTION

The non-invasive diagnosis of inflammation has a particular significance due to its involvement in a broad spectrum of pathologies. Slxyl-Lewis (sLe^x) is one of the ligands (Figure 1) expressed by leukocytes to interact with endothelium during inflammation (Figure 2).

A molecule mimicking sLe^x (1) has been synthesized and coupled to Gd-DTPA (2) (Figure 3).

As compared to the original particles, the branching of the synthetic mimic does not induce a major change of the relaxometric properties.

MR imaging

Figure 5 shows the axial MR images resulting from USPIO-g-sLe^x or USPIO injection to healthy and ConA-treated mice. Signal decrease caused by the USPIO-g-sLe^x or USPIO uptake in the Kuffer cells can be observed in the liver. However, with USPIO-g-sLe^x, the liver of the healthy mice becomes darker than that of the ConA-treated mice. These results suggest that USPIO-g-sLe^x is taken up by the Kuffer cells of diseased livers to a lesser extent, probably as a result of the interaction with E-selectin on the vascular endothelium.

MR Images

A. Pre-contrast

B. 65' post-contrast

C. Pre-Contrast

D. 65' post-contrast

MR image analysis

Analysis of the MR images (Figure 5) shows the reproducibility of the phenomenon one hour after the injection of the contrast agents. Relative enhancement of the SNR ratio measured in the liver of ConA-treated mice injected with USPIO-g-sLe^x is significantly higher than for the other groups.

DISCUSSION

A reduced SPID-mediated hepatic uptake in patients with cirrhosis, as been observed by imaging (6). Kuffer cells dysfunction was involved to explain this difference. In our experimental conditions however, the uptake of the USPIO is not significantly different between healthy and ConA-treated mice, which suggests that the function of Kuffer cells is not altered by ConA. Conversely, in diseased liver, USPIO-g-sLe^x are taken up by Kuffer cells to a lesser extent, probably because of their interaction with E-selectin expressed on liver endothelial cells during inflammation. This observation is supported by the SNR evolution in liver parenchyma.

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REFERENCES