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In vivo distribution evaluation of combination of Lipo-Dox and ^{188}Re-liposome in breast tumor model

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The aim of this study was to investigate the *in vivo* distribution evaluation of intravenously administrated combination of Lipo-Dox and ^{188}Re-liposome in breast solid tumor model by biodistribution and nanoSPECT/CT studies. Female BALB/c mice were subcutaneously inoculated with 4T1 cells. At 14 days after tumor inoculation, the tumor-bearing mice were intravenously injected via tail vein with pretreated Lipo-Dox (2.5 mg/kg) or pegylation liposome on day 1 and with the 11.1 MBq/100 μL of ^{188}Re-liposome on day 4. Biodistribution and nanoSPECT/CT imaging were performed at 24 h after injection of ^{188}Re-liposome. Biodistribution data of tumor sites were expressed as the percentage injected dose per gram of tissue (%ID/g). Each mouse was scanned for ~40 min by nanoSPECT/CT system. The obvious uptakes in nanoSPECT/CT images of tumor sites were observed at 24 h after injection of ^{188}Re-liposome in the pretreated Lipo-Dox group compared with that in pretreated pegylation liposome group. The tumor uptakes of the pretreated Lipo-Dox group and pegylation liposome group at 24 h after injection of ^{188}Re-liposome were 5.8 %ID/g and 3.3 %ID/g in 4T1 solid tumor mice, respectively. In this study, mice with subcutaneous implantation of 4T1 murine breast cancer received the delivery of Lipo-Dox first, after a three-day interval, then with ^{188}Re-liposome subsequently. The ^{188}Re-liposome was more sufficiently delivered to tumor sites in mice with pretreated Lipo-Dox than mice with pretreated pegylation liposome. We are going to prove combination of Lipo-Dox and ^{188}Re-liposome has the capability as potential therapeutic strategy for breast cancer in the future.

Biography

Liang Cheng Chen is the Associate Researcher of Isotope Application Division in Institute of Nuclear Energy Research. His major work is to investigate the preclinical animal study for drug efficacy, pharmacokinetics, dosimetry, molecular imaging and toxicology.

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