Small animal PET and animal MRI scanner were used for image acquiring on before treatment (day 0), day 3, and day 7 after treatment. The highest standardized uptake value (SUVmax) and the average of apparent diffusion coefficient value (ADCmean) were measured. Tumor size was followed up until it reached to 2000 mm^3. 【Results】 We divided mice into two groups (response and non response) based on tumor size (threshold of tumor size on day 14: 250 mm^3). SUVmax in response vs. non response group on day 0 and day 3 were not significant difference, while SUVmax on day 7 in response group was significantly lower than those of non response group (0.68 ± 0.08 vs. 1.31 ± 0.19, respectively, $P=0.001$). ADCmean (mm^2/s) in response vs. non response group on day 0 and day 3 were 0.30 ± 0.24 vs. 0.53 ± 0.32, 0.42 ± 0.17 vs. 0.38 ± 0.25, respectively. There were no significant difference of ADCmean between two groups on day 0 and day 3, but ADCmean had tended to rise in response group on day 3. 【Conclusions】 SUVmax change may be an early predictor to determine the response of triple negative breast cancer to Cisplatin treatment. Since number of mice would be not enough, we need further studies.

23. ^{90}Y-Bevacizumab Radioimmunotherapy (RIT) in Breast Cancer Xenograft: A Preliminary Study

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Vascular endothelial growth factor (VEGF) is an endothelial cell-specific mitogen that play important roles in tumor angiogenesis. VEGF is overexpressed in several cancer cells including breast cancer cells. Bevacizumab is a monoclonal antibody that binds and inactivates VEGF to inhibit tumor angiogenesis, growth, and proliferation. Bevacizumab has succeeded in labeling with several radioisotopes and has potential for specifically targeted radioimmunotherapy (RIT). We evaluated in vivo therapeutic study of Bevacizumab that radiolabeled with ^{90}Y as RIT in breast cancer xenograft. Bevacizumab was conjugated with diethylenetriaminepentaacetic acid (DTPA) and labeled with radioisotopes. In vivo biodistribution and therapeutic study was performed by using ^{111}In-DTPA-bevacizumab and ^{90}Y- DTPA-bevacizumab on mice bearing MDA-MB-231 breast cancer cell line. From 72 hours biodistribution study, ^{111}In-DTPA-bevacizumab showed high specific tumor uptake and significantly higher than ^{111}In-labeled non-specific monoclonal antibody (18.10 ± 2.01%dose/gram and 6.44 ± 0.71%dose/gram, respectively, $p<0.001$). From preliminary therapeutic study, ^{90}Y-DTPA-bevacizumab treated mice showed slower tumor growth than control mice (tumor volume at 10 days after treatment: 374.0 and 583.1 mm^3 ($n=2$), and 901.2 ± 445.6 mm^3 ($n=3$), respectively). Based on these results, ^{90}Y-DTPA-bevacizumab RIT can be a potential targeted RIT in breast cancer.

24. Detection of EGFR Positive Lung Squamous Cell Carcinoma by Dynamic Fluorescence Imaging

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【Objective】 To test the possibility by using fluorescence imaging to differentiate between epidermal growth factor receptor (EGFR)-expressing and non-expressing lung squamous cell carcinoma (SCC). 【Materials and methods】 Lung SCC EGFR-expression cell line H226 and non-expression cell line H520 were used. Panitumumab targeting EGFR conjugated to indocyanine green (ICG) was used for fluorescence imaging. Fluorescent microscopy study and flow cytometry were performed to test the ability of in vitro binding. 2 million H520 or H226 were subcutaneously injected into two sides of dorsal in the mice. 1 week after implantation, 50μg Panitumumab-ICG was injected intravenously and fluorescence images were acquired 6, 24, 48 and 72 hours after injection. The ratios of average fluorescent signal (AFS) of tumors and background were calculated for analysis and comparison. 【Results】 Panitumumab-ICG were initially quenched and showed an increased fluorescence signal. Fluorescent microscopy study and flow cytometry showed specific binding between conjugate and H226 but no specific binding with H520. The ratios of AFS at 48 hours (2.17 ± 0.45 versus 0.68 ± 0.16) and 72 hours (2.82 ± 0.66 versus 0.44 ± 0.21) showed significant differences between H226 and H520 ($p<0.05$). However, there was no significant difference of the ratio between 48-hour and 72-hour images in H226 tumors ($p=0.135$). 【Conclusion】 Panitumumab-ICG demonstrated a promise as a method to differentiate EGFR positive and negative lung SCC. The optimal time to acquire such fluorescent imaging was 48 hours after conjugate injection. In vivo fluorescence study by using lung SCC lymph node metastasis tumor model will be performed for next step.