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Evaluation of diffusion weighted MR Imaging and 18F-FDG PET for monitoring triple negative breast cancer response to cisplatin treatment

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Objective: To evaluate the potential of 18F-FDG PET and diffusion weighted MR Imaging (DWI) in predicting response of triple negative breast cancer (TNBC) to Cisplatin treatment.

Methods: Cisplatin (10 mg/kg) was injected one shot intraperitoneally into TNBC tumor bearing mice. Animals were imaged on PET and MRI scanners dedicated to animal use before treatment (day 0) and days 3 and 7 after treatment. The highest standardized uptake value (SUVmax) and the average of apparent diffusion coefficient value (ADCmean) were measured.

Results: We evaluated tumor growth of the non-treated mice (n=8) and treatment mice. Treated mice were divided into the response group (n=7) and the no response group (n=7) based on whether the tumor growth was similar to or slower than that of the non-treated mouse. SUVmax value on day 3 and day 7 (SUV3, SUV7) showed significant difference between the response group and no response group ($P<0.05$), however, ratio of SUVmax on day 7 to day 0 (SUV7/0) showed no significant difference between three groups ($P>0.05$). ADC mean value on day 0 (ADC0) of the response group was significantly lower than that of the no response group ($P<0.01$). The ratio of ADC mean on day 7 to day 0 (ADC7/0) showed significant difference between three groups ($P<0.01$), and ADC7/0 of the response group were significantly higher than those of control group and no response group.

Conclusions: ADC0, ADC7/0 is potential early predictors of response of TNBC to cisplatin treatment..

Biography

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