

Response of Mice Continuously Irradiated with Low Dose-rate Gamma-rays to Transplanted Tumor Cells

Daisaku TAKAI, Kazuaki ICHINOHE, Satoshi TANAKA, Junichirou KOMURA

Department of Radiobiology

Abstract

We have previously shown that the transplantability of a murine ovary granulosa cell tumor cell line was significantly enhanced in syngeneic B6C3F₁ mice continuously irradiated with low dose-rate (20 mGy/22h/day) gamma-rays to a total accumulated high dose of 8000 mGy. In the present study, the transplantabilities were compared in mice continuously irradiated with low dose-rate gamma-rays at 1.0 and 0.05 mGy/22h/day to total accumulated doses of 400 mGy (mid-level) and 20 mGy (low level), respectively. The transplantability was partially enhanced in mice irradiated with 1.0 mGy/22h/day, but not in mice irradiated with 0.05 mGy/22h/day. In addition, transplantabilities in mice co-transplanted with dendritic cells were also compared using the same irradiation regimens. The enhanced transplantability after low dose-rate irradiation at 20 mGy/22h/day was decreased when co-transplanted with dendritic cells.

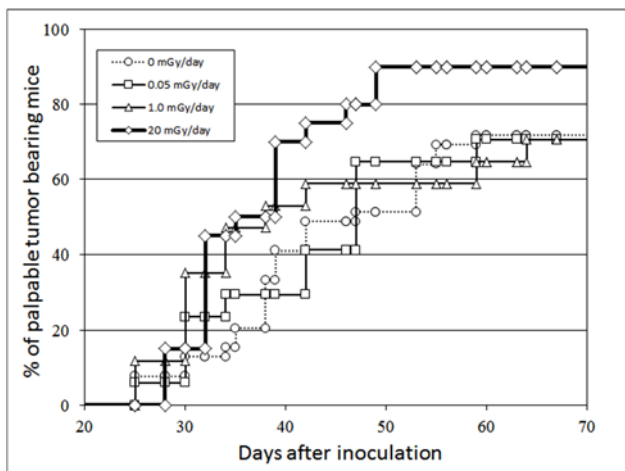


Fig. 1 Comparison of tumor transplantability. 1.0×10^5 OV3121 cells inoculated in mice - non-irradiated control ($\diamond$) and irradiated with 0.05 ($\square$), 1.0 ($\triangle$), or 20 ($\circ$) mGy/22h/day. The numbers of tumor-bearing mice, in which a palpable tumor was detected, were counted to assess transplanted tumor formation.

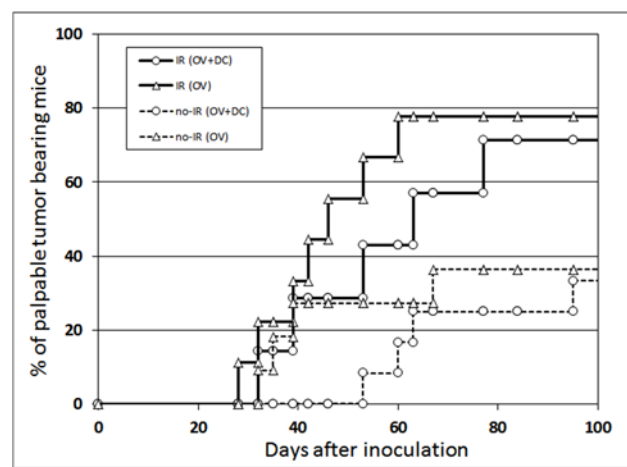


Fig. 2 Comparison of tumor transplantability. Age matched mice, non-irradiated control (dotted lines) and low dose-rate (20mGy/22h/day) gamma-irradiated (solid lines) inoculated with 1.0×10^5 OV3121 cells with ($\circ$) or without ($\triangle$) dendritic cell (DC) co-transplantation. The numbers of mice with palpable tumors were counted to assess transplanted tumor formation.