Response of B6C3F1 Mice Continuously Irradiated with Low-Dose-Rate Gamma-Rays to Transplanted Tumor Cells

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Abstract

Transplantability of a cell line from a murine ovary granulosa cell tumor was significantly enhanced in syngeneic $B6C3F_1$ mice continuously irradiated with low-dose-rate (20 mGy/22h/day) gamma-rays accumulating to a high dose (8000 mGy). To understand the mechanisms for the enhanced tumor transplantability, we examined RNA expression profiles of age-matched irradiated and non-irradiated control mice. Reduced expressions of some chemokine receptors could contribute to the enhanced transplantability. Moreover, we established cell lines derived from fibrosarcoma that arose in a non-irradiated female $B6C3F_1$ mouse and leiomyosarcoma that arose in a female $B6C3F_1$ mouse irradiated with low-dose-rate gamma-rays continuously. The enhanced transplantability of the fibrosarcoma cell line was observed in syngeneic $B6C3F_1$ mice continuously irradiated with the low-dose-rate gamma-rays.

Table 1 Relative expressions of chemokine receptors in 4 groups of mice.

	chmokine receptors			
Group	Ccr1	Ccr3	Ccr4	Cxcr3
C-Rej (n=4)	1.17	0.96	1.08	1.17
C-Acc (n=3)	0.88	0.99	0.93	0.87
R-Rej (n=1)	1.16	0.52	1.14	0.99
R-Acc (n=3)	0.79	1.13	0.91	0.93

OV3121 cells were inoculated into age-matched irradiated and non-irradiated B6C3F1 female mice. 4 groups of mice were selected. C-Rej, the non-irradiated mice that rejected tumor; C-Acc, the non-irradiated mice that accepted tumor; R-Rej, the irradiated mice that rejected tumor; R-Acc, the irradiated mice that accepted tumor.

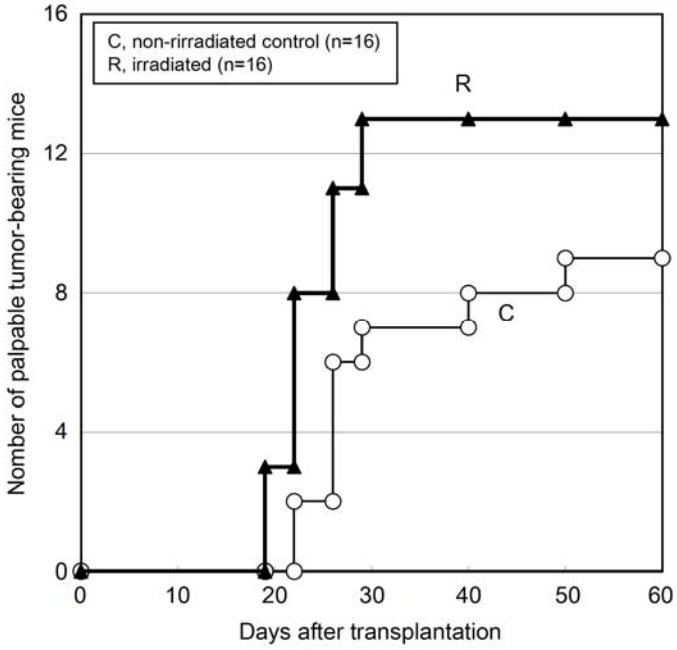

Fig. 1 Tumor cell transplantability in $B6C3F_1$ mice. SK-167-4 cells were inoculated into age-matched, non-irradiated control (C, open circle) and irradiated (R, closed triangle) mice on 400 days after continuous gamma-ray irradiation with a total accumulated dose of 8000 mGy.