Transgenerational Effects in Mice Exposed to Acute High Dose-rate Gamma-rays – Preliminary Study –

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Abstract

The purpose of this work was to determine the study design and protocol for studying the effects of acute high dose-rate gamma-ray irradiation on the progeny of male (sires) mice irradiated with ^{137}Cs gamma-rays at a rate of 0.8 Gy/min to total doses equivalent to 1 Gy, 2 Gy, 4 Gy and 6 Gy. The male mice were bred with non-irradiated females to produce F_1 mice at 2, 7 and 10 weeks after irradiation exposure. The F_1 mice were sacrificed at 10 weeks of age and subjected to pathological examination. Litter size, sex ratio, weaning rate and survival rate at 10 weeks of age were used as parameters to evaluate biological effects of high dose-rate irradiation.

Results show that high dose-rate irradiation of doses up to 2 Gy produced the sufficient number of pups required for the experiment. Irradiation doses of 4 Gy and over showed a significant reduction in the litter size.

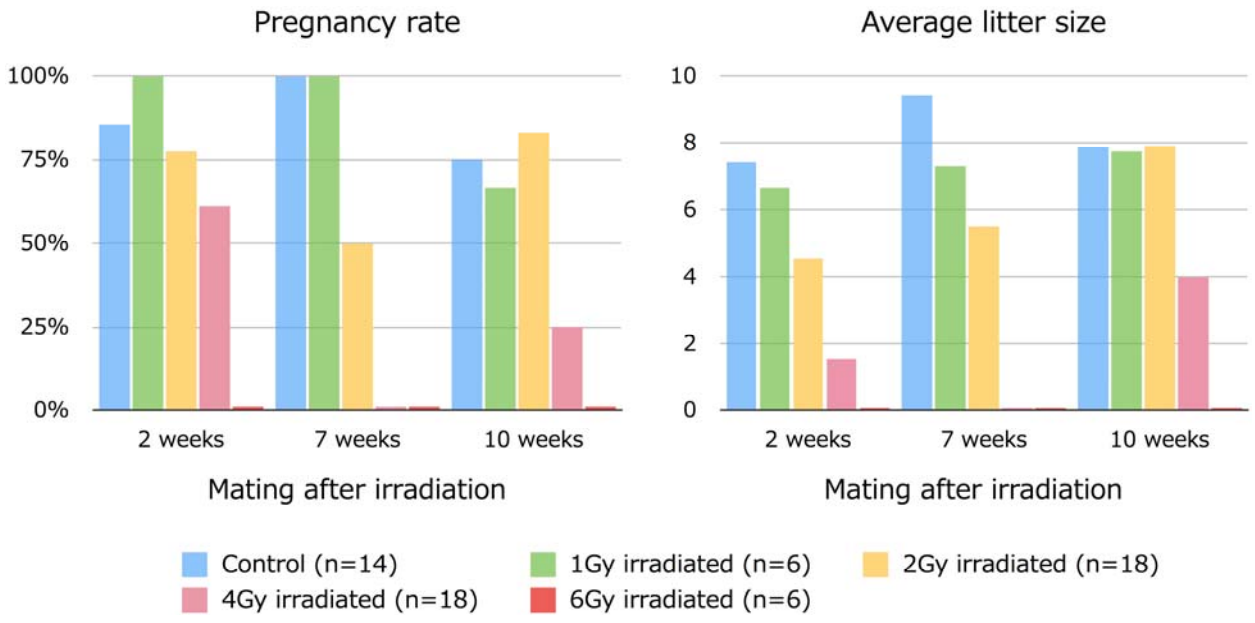

Fig. 1 Pregnancy rate (left) and average litter size (right)

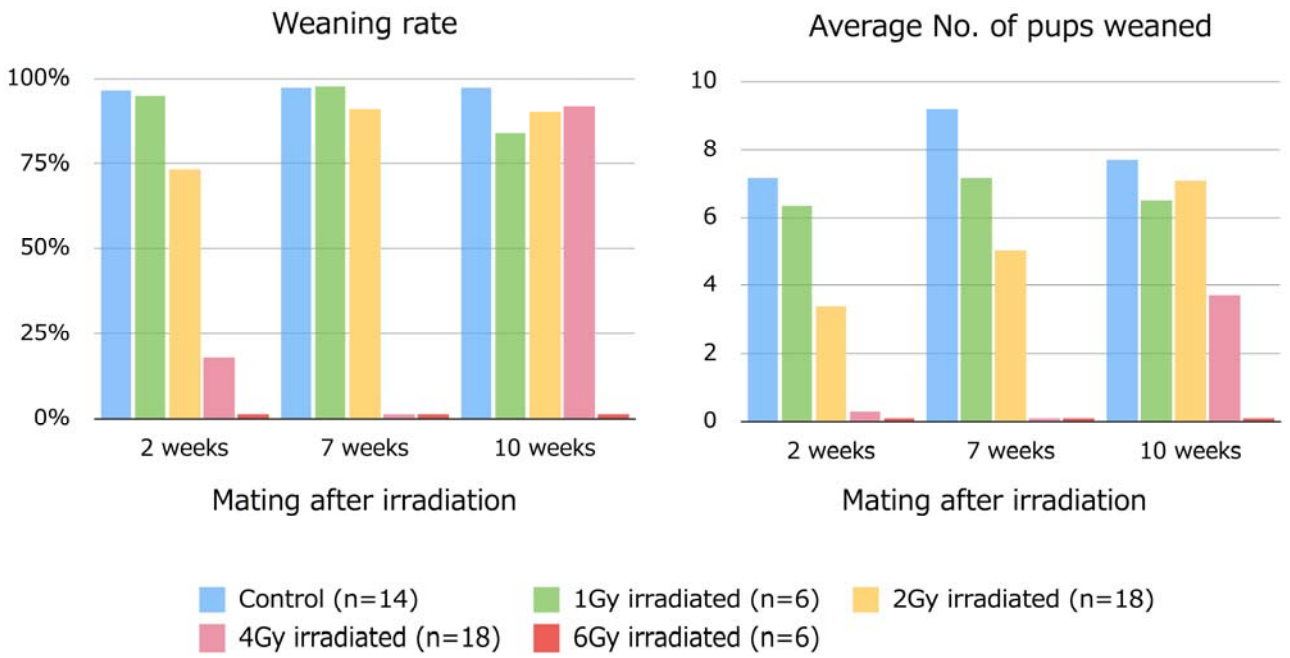

Fig. 2 Weaning rate (left) and average No. of pups weaned (right)