

EFFECT OF INJECTION OF HOMOLOGOUS TISSUE SUSPENSIONS ON MORTALITY OF IRRADIATED MICE

N. N. Klemparskaya and V. V. Shikhodyrov

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Subcutaneous injection of homologous tissue suspensions of intestine, liver, and kidneys and also intradermal injection of distilled water into the upper lip of irradiated mice increases the mortality among the animals.

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Investigation of the effect of absorption of tissue products on the course of radiation injuries is of theoretical and practical importance.

This paper describes a study of mortality among noninbred mice irradiated with Co^{60} γ -rays in a dose rate of 671-685 R/min on the ÉGO-2 apparatus in a dose of 800 R, receiving subcutaneous injections of 0.5 ml of a 25% suspension of homologous tissues of different organs 5 h after irradiation. To delay absorption, 5% of sterile cream was added. In addition, osmotic trauma to the tissues of the upper lip was inflicted on some animals by injection of 0.1 ml sterile distilled water (the labial test [1]).

Injections of suspensions of the various tissues (intestine, liver, kidney) into the irradiated mice significantly increased the mortality among the animals and, in some cases (intestinal tissue, spleen extract) hastened death. The formation of even a small quantity of breakdown products of autologous tissue in the labial test also aggravated the effect.

A significant decrease in mortality among the animals was observed only after injection of a residue of spleen cells mixed with the sedimenting agent (in the group without the labial test). In histological sections of the spleen of mice of various groups undergoing the labial test alone without injection of homologous tissues, and sacrificed on the 6th day after irradiation (Fig. 1a), more marked changes were observed than in animals receiving only irradiation (Fig. 1b). The high sensitivity of the irradiated organism to breakdown

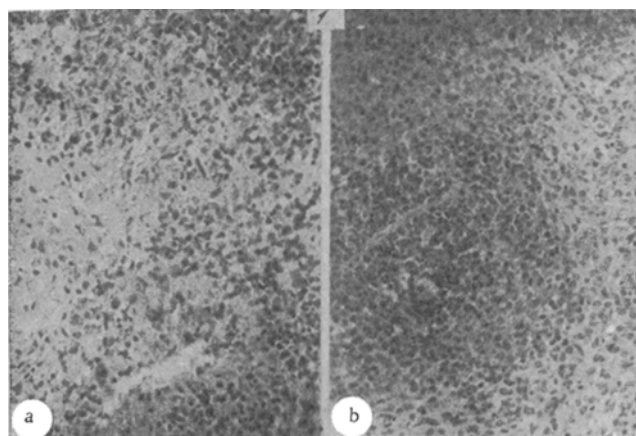


Fig. 1. Changes in reticulum cells of spleen of irradiated mice on 6th day. a) With labial test (necrosis of cells); b) without labial test (swelling of cells). Hematoxylin-eosin, 200 \times .

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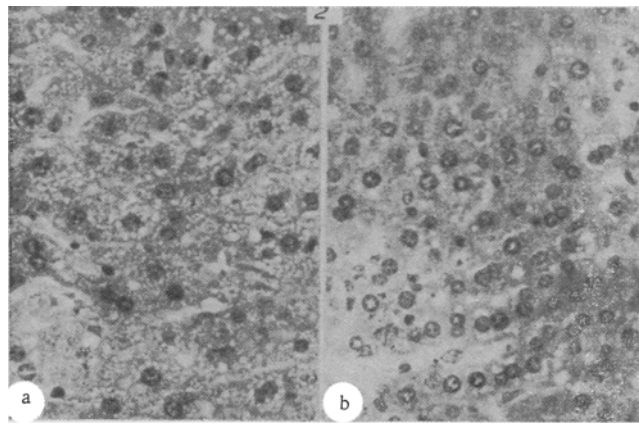


Fig. 2. Changes in parenchymatous cells of liver of irradiated mice on 6th day. a) With labial test (vacuolar degeneration and necrosis); b) without labial test (cloudy swelling). Hematoxylin-eosin, 400 \times .

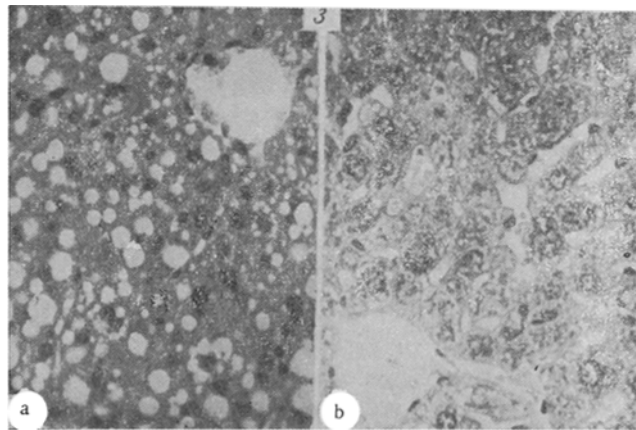


Fig. 3. Changes in parenchymatous cells of liver on 6th day in irradiated mice receiving injection of intestinal tissue. a) With addition of labial test (necrosis and marked vacuolar degeneration); b) without labial test (vacuolar degeneration and cloudy swelling). Hematoxylin-eosin, 400 \times .

products of autologous tissues was also confirmed by the more marked changes in the liver in the group "irradiation+labial test" (Fig. 2a) than in animals irradiated only (Fig. 2b). Tissue destruction progressing to necrosis and vacuolar degeneration of the cells was particularly severe after a combination of injection of suspensions of homologous intestinal tissues and the labial test (Fig. 3a), even when compared with preparations from irradiated animals receiving injections of homologous tissue only (Fig. 3b).

These results demonstrate that irradiated animals are highly sensitive to parenteral injection of tissue products.

LITERATURE CITED

1. N. N. Klomparskaya, N. A. Kraevskii, and V. V. Shikhodyrov, Byull. Éksperim. Biol. i Med., No. 12, 28 (1958).