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EFFECT OF DEXAMETHASONE ON SOME MARKERS FOR CYTOTOXICITY AND PROLIFERATION IN RAT INTESTINE AFTER TOTAL BODY GAMMA IRRADIATION

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Summary

The effect of dexamethasone on some markers for cytotoxicity and proliferation in rat intestine after total body gamma irradiation was studied. Seventy-two male rats were divided into three groups: group 1 (controls); group 2 (receiving a single 6 Gy total body irradiation); group 3 (receiving dexamethasone and 6 Gy ionizing radiation). The animals in group 3 were injected *i.p.* with dexamethasone at a dose of 3 mg/kg four hours before irradiation, as well as on days 2 and 3 after exposure. The levels of IL-6 and CINC-1 were determined in the plasma by the ELISA method. Immunohistochemical and histological studies were performed in rat intestine. Ionizing radiation increased the levels of IL-6 and CINC-1 considerably in comparison to that in controls on day 3. Dexamethasone significantly decreased the level of IL-6 on day 7, as compared to both controls and irradiated group. The level of CINC-1 in group 3 was significantly lower on days 3 and 7 than that in the control group. Immunohistochemical testing with the marker for proliferative activity Ki-67 in group 2 showed a total suppression of the proliferative activity, in contrast to the controls. In group 3, the same testing showed a decrease, though the activity was still present. Dexamethasone produced moderate anti-inflammatory protection from radiation injury.

Key words: cell proliferation, dexamethasone, inflammation, interleukins, ionizing radiation

Introduction

Inflammation is a classical pathophysiological response to ionizing radiation. Inflammatory lesions have been found locally in a number of tissues, such as skin, intestine or lung, and in cases of a wide range of doses (between 5 and 40 Gy). Recent studies have shown early changes such as an increase in the number of adherent and emigrated leucocytes [1, 2]. An early and persistent cytokine production following local exposure of rat intestine [3] or lung [4] has been established and related to fibrosis, occurring later in time.

Endothelial cells play a crucial role in the initiation, development and maintenance of the

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