

湿热环境对辐射损伤小鼠的影响

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探讨了自然湿热环境(Hot and humid environment, HHE)及模拟HHE对辐射损伤动物的生存率、中位生存时间等的影响规律,并对其损伤机制作了初步探讨。结果表明:

(1)和室温(Room temperature, RT)组相比,模拟HHE 60 min以上的作用时间,使受亚致死剂量(7 Gy)照射小鼠的死亡率上升,中位生存时间提前;而受致死剂量(9 Gy)照射的小鼠,模拟HHE作用组和RT组之间各指标无显著差异。

(2)模拟HHE对辐射损伤小鼠外周血淋巴细胞变化无显著差异,但RT组在照后第3天达最低值,HHE作用组在照后第3天仍然继续下降,到第5天降到最低值 $(3.300 \pm 0.300) \times 10^7$ 细胞数/L,且最低值之间差异显著。

(3)7 Gy照射小鼠,自然HHE 9 h和全自然环境组生存时间与RT组差异显著。9 Gy照射小鼠,自然HHE 6 h、9 h、全自然环境组生存时间和RT组差异显著;RT组小鼠外周血淋巴细胞下降速度低于各自然HHE组且有顿挫回升,而各自然HHE组无顿挫回升。

所以,自然及模拟HHE环境使受照小鼠生存指标明显下降,加重照后早期外周血淋巴细胞下降。

关键词 湿热环境,辐射损伤,生存指标,淋巴细胞

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The effect of hot and humid environment on mice irradiated by γ -rays

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The effect of natural hot and humid environment (HHE) and mock HHE on γ -irradiated mice and their preliminary mechanisms were studied by comparing the survival rate and the median time, etc. The results indicated that: (1) Comparing to the RT-treated mice, there were obvious death rate increase and median time promotion with the mice treated with mock HHE for over 60 min and 7 Gy γ -ray irradiation, whereas no difference was observed within the 9 Gy groups. (2) The mock HHE treatment had no obvious effect on peripheral blood lymphocyte of the γ -ray irradiated mice, however, lymphocyte of the RT-treated mice achieved minimum on the 3rd day after irradiation, whereas the lymphocyte minimum of $(3.3 \pm 0.3) \times 10^7$ was achieved on the 5th day after irradiation with the HHE-treated mice, with marked difference between the two minimum data. (3) Comparing to the RT-treated mice, the differences in survival time was obvious with the 7 Gy groups exposed to entire natural HHE and natural HHE for 9 h. In the 9 Gy group, the survival time of the 6 h, 9 h and entire natural HHE groups were all significantly shorter than that of the RT group. Descending rate of peripheral blood lymphocyte of the RT group was lower than that of all natural HHE groups, and the lymphocyte fluctuating resuscitation was found in the RT group, whereas no such changes in all natural HHE groups. It is concluded that the mock and natural HHE treatments decreased significantly survival indexes of the irradiated mice, giving rise to increased incipient descending rate of peripheral blood lymphocyte of the mice.

KEYWORDS Hot and humid environment, Radiation injury, Survival index, Lymphocyte

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