Music, immunity and cancer

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Abstract

The effects of music on the immune system and cancer development were evaluated in rodents subjected to sound stress. Animals were exposed daily to broad band noise around midnight and/or music for 5 hours on the following morning. Thymus and spleen cellularity, peripheral T lymphocyte population, the proliferative response of spleen cells to mitogen concanavalin A and natural killer cell activity were calculated in BALB/c mice. Sprague Dawley rats were injected i.v. with Walker 256 carcinosarcoma cells; 8 days later the rats were sacrificed and the number of metastatic nodules on the surface of the lungs was calculated macroscopically. Music reduced the suppressive effects of stress on immune parameters in mice and decreased the enhancing effects of stress on the development of lung metastases provoked by carcinosarcoma cells. Music enhanced the immune parameters and the anti-tumor response in unstressed rodents. Our data at present demonstrates that music can effectively reverse adverse effects of stress on the number and capacities of lymphocytes that are required for an optimal immunological response against cancer in rodents.

Figure. Syngenic Sprague-Dawley rats were intravenously injected with a suspension of 1 x 10^4 Walker 256 sarcoma cells and, 8 days after tumor inoculation, the lungs were sectioned in the frontal segment through the pulmonary hilus, stained with Hematoxylin-Eosin, and subjected to the calculation of segmental area of metastatic nodules and the percentage of the metastases to the whole area of the section (TC (%) = ratio of the mean number of the test groups to that of the control). Values are the mean ± SD of 10 rats. Stress application caused significant increases (p < 0.01) in both parameters (△). Music significantly (p < 0.01) reduced the stress-induced increase of both parameters (○). By
contrast music did not affect the number of nodules but significantly ($p < 0.05$) reduced the percentage of the metastases in comparison with unstressed controls (\_).
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