Effect of alpha tocopherol acetate in Walker 256/B cells-induced oxidative damage in a rat model of breast cancer skeletal metastases

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Résumé en anglais	The pathophysiological changes and the oxidative–antioxidative status were evaluated in the bone microenvironment of rat inoculated with Walker 256/B mammary gland carcinoma cells, and used α-tocopherol acetate (ATA) as a countermeasure.Walker 256/B cells were injected into the right femora of aged male rats. Animals were randomized into three groups: 12 rats were injected with saline (control group); 14 rats were injected with Walker 256/B cells (5 × 104) in the medullar cavity (W256 group); 14 rats were inoculated with Walker 256/B cells and treated with ATA (45 mg/kg BW) (W256 + ATA group). After 20 days, rats were euthanized and the femurs were radiographed. Micro architectural parameters were measured by microcomputed tomography and histology. Serum, bone and bone marrow were evaluated for oxidative damage. In parallel, cell cultures were done in the presence of ATA and ROS were measured by fluorescence; apoptotic cells were determined in parallel. W256 groups had osteolytic damages with marked resorption of cortical and trabecular bone. W256 + ATA animals presented marked osteosclerotic areas associated with tumor necrosis areas inside the bone cavity. Levels of lipid peroxidation and protein oxidation were found to increase in W256 rats; a significant reduction in SOD and GSH-p activities was also observed. W256 + ATA group had significantly reduced oxidative damage, but not reversed back to the control levels. The present study shows that Walker 256/B cells induce skeletal metastases associated with oxidative damage in the bone microenvironment. ATA reduced the oxidative stress damage, enhanced osteosclerosis and tumor cell apoptosis both in vitro and in vivo.
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