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JOURNAL ARTICLE

Effects of macrophage depletion at different times after treatment with ethylene dimethane sulfonate (EDS) on the regeneration of Leydig cells in the adult rat

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Testicular macrophages were selectively depleted in the right testes of adult rats by an intratesticular injection of dichloromethylene diphosphonate-containing liposomes (Cl2MDP-lp), whereas the left testes were injected with 0.9% NaCl and served as control. Before or after Leydig cell destruction with ethylene dimethane sulfonate (EDS), treatment with Cl2MDP-lp/NaCl was given at different times to study the requirements of macrophages in the different stages of Leydig cell regeneration. On day 30 after EDS treatment, new Leydig cells were abundant in the left, macrophage-containing testes. However, in the right, macrophage-depleted testes, the number of Leydig cells was related to the time elapsed between EDS treatment and macrophage depletion. When macrophages were depleted on day 10 before or on days 4 or 10 after EDS treatment, new Leydig cells were nearly absent at 30 days. However, when macrophages were depleted on days 16 or 22 after EDS treatment, Leydig cells were found at 30 days, but their numbers were equivalent to the number of Leydig cells that were already present in EDS-treated animals at the time the macrophages were depleted. These results indicate that macrophages are needed for the differentiation of Leydig cells from mesenchymal precursors, as well as for the proliferative activity of the newly formed Leydig cells, possibly through the secretion of essential growth factors.

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