

37. ANALYSIS OF CELLS EXPRESSING NATURAL KILLER (NK) CELL MARKERS IN THE RAT TESTIS

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Natural killer (NK) cells are large lymphocytes, which are able to recognize abnormal or transformed cells without prior immunization, thereby contributing to innate immunity. NK T cells are a subset of T cells that exhibit both T cell and NK cell surface phenotypes and regulate immune responses by producing regulatory cytokines (IFN- γ or IL-4) in addition to supporting immune surveillance. In mice and humans, NK T cells are identified by binding of the MHC class I-like tetramer, CD1d/ α GC. Cells expressing NK cell specific markers are found in the interstitial tissue of the rat testis, but the proportions of these cells that are classical T cells, NK cells, or NK T cells is not known. Using flow cytometry, we established that 40% of non-adherent leukocytes in the adult rat testis interstitium express CD3 (a T cell receptor), 25% express the NK receptor (NKR), and 19% express both CD3 and NKR (i.e. are NK T cells). However, the CD1d/ α GC tetramer did not bind to the NK T cells in either testis or blood, suggesting the rat NK T cells may not bind the tetramer. After stimulation *in vitro* by phorbol myristate acetate (PMA) and ionomycin, IFN- γ was expressed by 61% of T cells and 17% of NK T cells in the testis, but IL-4 was not detected. Cells expressing NK cell markers only exhibited little expression of either IL-4 or IFN- γ . The majority of T cell and NK T cells also expressed the CD8 co-receptor. This provides the first evidence for the existence of a substantial population of both NK and NK T cells in rat testes. Since IFN- γ -producing CD8⁺ NK T cells have been found to play an essential role in the prevention of graft rejection, a similar role in the testis may be expected. Continuing studies on the NK and NK T cell populations of the testis may reveal the mechanisms behind extended graft survival in this organ, and protection of the male reproductive tract from viruses and tumors.