ABSTRACT

NK cells play an important role as a part of the innate immune system, they however share many common features with cells of the adaptive immune system and they can modulate their functions as well. NK cells recognize non-self molecules (induced by viral infection or tumor transformation) through a wide variety of receptors on the cell surface. They also express receptors specific for their own structures, MHC glycoproteins. NK cells distinguish infected or transformed cells according to the quantity of these molecules on the target cell surface. Then NK cells allow apoptotic signals to cause cell death or the tolerance is established. They also promote inflammatory responses by the production of cytokines and chemokines.

NK receptors can be grouped into activating, inhibitory, adhesion, cytokine, and chemokine receptors depending on their function. Based on interactions with appropriate ligands, NK cells exert cytotoxicity or they are inhibited. Moreover, their functions are influenced by the cytokine microenvironment.

NK receptors can be also divided into C-type lectin and immunoglobulin superfamilies according to the structure. Ly49, NKG2/CD94 and NKR-P1 are receptor families that belong to the C-type lectin glycoproteins. These molecules have a type II transmembrane protein orientation and they recognize MHC glycoproteins. The latter group includes KIR, LILR and NCR receptors, type I transmembrane proteins with various number of immunoglobulin domains in the extracellular region. KIR and LILR bind MHC glycoproteins, NCR non-MHC ligands.

The data obtained so far support a role for NK cells in reproduction, in the early control of parasitic and viral infections and cancer. It also appears that NK cell modulation can lead to the treatment of the autoimmune diseases, NK cells could also mitigate complications after the bone marrow transplantations.