

# Cytolytic Activity against Natural Killer (NK) Cells and Altered Protein Expression

Subhranshu Pattanaik\*

Department of Clinical Hematology and Bone Marrow Transplant, Tata Medical Center, Kolkata, India

## DESCRIPTION

Natural Killer (NK) cell is a type of immune cell which contains specific enzymes that can kill cancer cells or virus-infected cells as well. It is a kind of white blood cell and sometimes called as NK-cell or NK-LGL. Natural Killer (NK) Cells are lymphocytes that have same progenitor with T and B cells and belong to the same family. NK cells are categorized as group I Innate Lymphocytes (ILCs), which are cells of the innate immune system, and they react quickly to a wide range of pathological challenges. NK cells is for destroying virally infected cells as well as for spotting and treatment early cancer signs. Specialized NK cells are found in the placenta and may play a significant role in pregnancy in addition to defending against disease.

NK cells capacity to eliminate tumor cells without priming or activation (in contrast to cytotoxic T cells, which need priming by antigen presenting cells). NK cells release cytokines like Interferon (IFN) and Tumor Necrosis Factor (TNF) that interact with immune cells like dendritic cells and macrophages to strengthen the immune response. NK cells stay in constant contact with one another while patrolling. Activating and inhibitory signals from receptors on the NK cell surface control whether or not the NK cell kills these cells. The molecules expressed on the surface of cancer cells and infected cells are recognized by activating receptors of the NK cell.

Innate immune cells called Natural Killer (NK) cells exhibit potent cytolytic activity against physiologically stressed cells like tumor cells and virus-infected cells. NK cells exhibit a wide range of phenotypic diversity and tissue distribution. Numerous activating and inhibiting receptors are expressed by NK cells, which recognize the altered protein expression on target cells and regulate the cytolytic function. In numerous clinical studies, NK cells have been used to inhibit tumor growth. But only in

hematological malignancies are the encouraging; solid tumors decreased. There is mounting evidence that the phenotype and function of NK cells are regulated by the tumor micro environment.

NK cells respond quickly to the development of tumors as well as intracellular pathogens are three days after infection and on virus-infected cells. Immune cells typically recognize the Major Histocompatibility Complex (MHC) molecules on the surfaces of infected cells, which lead to the release of cytokines and the death of the infected cell through lysis or apoptosis. NK cells are special because they can identify stressed cells and kill them even in the absence of antibodies and MHC, starting an immune response much more quickly.

When Cluster of Differentiation 56 (CD56) is present but CD3 is not, NK cells can be identified (CD56+, CD3). NK cells, along with B and T lymphocytes, are two of the three types of cells that can be distinguished from the common lymphoid progenitor. NK cells are a subset of innate lymphoid cells. It is known that NK cells develop and mature in the bone marrow, lymph nodes, spleen, tonsils, and thymus before leaving those organs and entering the bloodstream. Natural killer T cells (NKTs) and NK cells have different phenotypes, origins, and effector functions; frequently, NKT cell activity encourages NK cell activity by secreting interferon gamma.

Cytotoxic lymphocytes known as Natural Killer (NK) cells work at the intersection of innate and adaptive immunity. In addition to being involved in tumor surveillance, atopic diseases, and many autoimmune disorders, NK cells are crucial for the defense against viral infections. Generally NK cell activation, development, and effector function offer a thorough clinical impression of NK cell deficits, including NK cell function and/or development impairment.

**Correspondence to:** Subhranshu Pattanaik, Department of Clinical Hematology and Bone Marrow Transplant, Tata Medical Center, Kolkata, India, E-mail: subhransu319@gmail.com

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