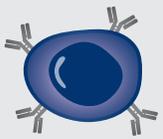


The Role of the Immune System in Non-Hodgkin's Lymphoma

Types of lymphocytes

One important class of immune cells are lymphocytes. After being created in the bone marrow, some lymphocytes stay and mature into B cells, while others migrate to the thymus and develop into T cells. Another type of lymphocyte born in the bone marrow is called a natural killer (NK) cell. B, T and NK cells all patrol the body for invaders.^{2,3}



B cells:

Help protect the body against bacteria and viruses by making antibodies that mark them for destruction by other parts of the immune system.⁴



T cells:

Some T cells directly or indirectly help kill cells that have been infected, while others, known as regulatory T cells, dampen the activity of other T cells.^{3,4}



NK cells:

Cause infected cells to commit cellular suicide; send chemical signals that communicate with and regulate other immune cells.⁵

What is the immune system?

The immune system is a combination of organs and cells that protect the body from infection by keeping harmful pathogens out and destroying those that get in.¹

The function of a healthy immune system

When the immune system is healthy, it protects the body not only from infections, but identifies cancerous and/or precancerous cells and eliminates them before they can cause harm, in a process called “cancer surveillance.”^{6,7} Immune cells that are responsible for killing cancer cells include T cells and NK cells.⁸

The impact of immune dysfunction

When the immune system doesn't function optimally, T cells and NK cells fail to either detect or destroy the cancerous cells, including non-Hodgkin's lymphoma (NHL) cells.^{8,9} Cancer cells also promote growth and division of regulatory T cells, suppressing T cell activity and resulting in further immune dysfunction.⁹

Immune dysfunction and NHL

- **Weakened immune systems**
Individuals with weakened immune systems, including people infected with HIV and organ transplant recipients, are at a greater risk of developing NHL.¹⁰
- **Autoimmune diseases**
In an autoimmune disease, the immune system attacks the body's own tissues. An overactive immune system in autoimmune diseases may prod lymphocytes to grow and divide more often than normal, thereby increasing the risk that they will develop into lymphoma cells. Autoimmune diseases such as rheumatoid arthritis, lupus, Sjögren disease and Celiac disease have been linked to an increased risk of NHL.¹⁰

Targeting the immune system in treating NHL

Chemotherapy is a standard of care for most forms of NHL. There is an unmet need for treatments that work with the immune system and may offer alternatives to patients with slow-growing NHL.^{8,9,11,12}

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