



Comprehensive Study on Characteristics and Disorders of White Blood Cells

Reena Shethan*

Department of Medicine, University of Vermont Cancer Centre, Burlington, USA

*Corresponding author: Reena Shethan, Department of Medicine, University of Vermont Cancer Centre, Burlington, USA; E-mail: reenashethan@med.uvm.edu

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Description

Leukocytes are also known as white blood cells. They are in charge of protecting our bodies from infection. White blood cells circulate in the bloodstream as part of the immune system and respond to injury or illness. White blood cells detect the infection site as they move through bloodstream and tissues, functioning as an army general to inform other white blood cells of the infection's location, assisting in the defence of the body against disease causing organisms. After the intruder has arrived, the white blood cell army battles it by producing antibody proteins that bind to the organism and kill it.

Characteristics of white blood cells

The bone marrow produces 60-70 percent of adult white cells. The thymus, spleen, and lymph nodes are very important lymphatic organs for lymphocyte production. Monocytes (4% to 8% of white cells) are produced by the reticulo-endothelial tissues of the spleen, liver, lymph nodes, and other organs. In a healthy adult, white blood cells range from 4,500 to 11,000 per cubic millimeter of blood. White blood cells, as living cells, must constantly produce energy in order to survive. White cells with nuclei can make protein as well as Ribonucleic Acid (RNA).

Although white cells are found in the bloodstream, the majority of them are found in tissues where they combat infections. The few white cells in the bloodstream are just travelling from one location to

another. The chemical routes employed are both similar to and more advanced than those seen in red blood cells and other tissue cells. White cells with nuclei can make protein as well as Ribonucleic Acid (RNA).

White blood cells are highly specialized for their specific roles, so they do not divide into new cells in the bloodstream (mitosis), albeit. White cells are classified into three types depending on their appearance under a light microscope: lymphocytes, granulocytes, and monocytes. Each class has a different set of responsibilities.

Lymphocytes, which are further subdivided into B cells and T cells, recognize foreign substances and evacuate them from the body. Antibodies are proteins secreted by B lymphocytes that bind to invading microorganisms in body tissues and aid in their elimination. Natural Killer (NK) cells, so termed because of their natural ability to kill a variety of target cells, are also included in this category. Lymphocytes account for 25 to 33 percent of white blood cells in a healthy person. Granulocytes, the most common white cells, are significant mediators of allergies and other types of inflammation, as well as aiding the body in the elimination of large dangerous organisms such as protozoans and helminths.

Monocytes, which account for 4%-8% of all white blood cells in the blood, go from the blood to infection sites where they undergo further differentiation to become macrophages. Because they phagocytose intact or dead microorganisms, these scavenger cells can directly eliminate pathogens and remove cellular debris from infection sites.

White blood cell disorders

Different diseases are associated with specific cell types, which reflects that cell type's distinct role in the body's defence. White blood cell counts in neonates are normally high and gradually drop to adult levels during development. The lymphocyte count is an exception; it is low at birth, reaches a peak during the first four years of life, and then gradually drops to a stable adult level.

An increase in white blood cells can be caused by intense physical activity, convulsions, significant emotional reactions, pain, pregnancy, labor, and some medical situations such as infections and intoxications. Leukopenia is a disorder that causes an abnormal decrease in the number of white blood cells. The count may fall in reaction to specific illnesses or drugs, as well as in the presence of other conditions such as chronic anemia, malnutrition, or allergy.

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