
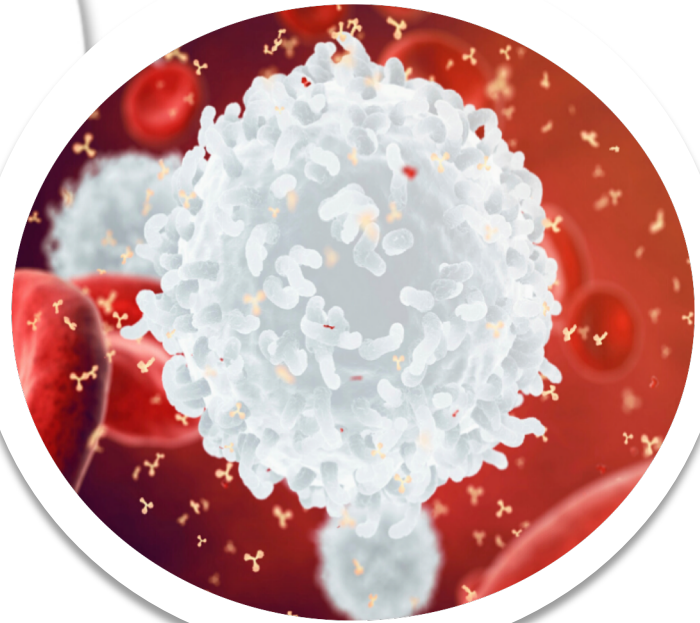


leukocytes

microscopic vascular
health-care fetal transplantation medicine
laboratory repair self-renewal scrutiny
healing mitosis division restoring biotechnol
hemoglobin infection dna research death
medicine disease organs red biology
artery microbiology wound clinic
health embryonic intramuscular

A hand holding a magnifying glass over a word cloud. The word cloud contains various terms related to biology and medicine, with 'Blood Cells' being the most prominent.

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In this presentation we will be discussing a topic by the name of leukocytes. You will know what leukocyte is and its function in the body, and the difference between WBC and RBC. Also, the types of leukocytes and their different functions, and lastly the summary to make sure you get our point.



What is a leukocyte ?

- Leukocyte is a type of blood cells that is made in the bone marrow and found in the blood and lymph tissue. Leukocytes are part of the body's immune system. They help the body fight infection and other diseases .
- Types of leukocytes are granulocytes (neutrophils, eosinophils, and basophils), monocytes, and lymphocytes (T cells and B cells).
- Checking the number of leukocytes in the blood is usually part of a complete blood cell (CBC) test. It may be used to look for conditions such as infection, inflammation, allergies, and leukemia. Also called WBC and white blood cell.

Difference between WBC and RBC:



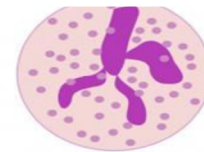
When compared to red blood cells (RBCs), leukocytes are colorless, which is why they are named as "white blood cells". Red blood cells (RBCs) are of one type, but white blood cells (WBCs) are of five types. Leukocytes are more diverse in structure and cellular operation, whereas red blood cells are specialized to perform a single function. Red blood cells do not contain a nucleus. On the other hand, white blood cells (WBCs) consist of organelles and nuclei.

Types of leukocytes :

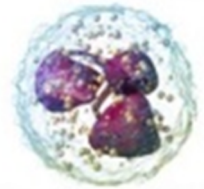
➤ Neutrophils :

Most abundant type of white blood cell and the first responder to microbial infection

- They are unable to renew their lysosomes and die after having phagocytosed a few pathogens (forms the majority of pus)
- Analogy: Standard police officer – quick to respond to the situation, but lacks special training or skills and so dies rapidly



neutrophil



Neutrophil

➤ Eosinophil

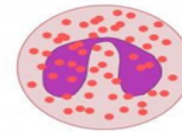
Prominent at the sites of allergic reactions and parasitic infections (rare in blood but common at mucous membranes)

➤ Do not phagocytose pathogens but instead release chemical products

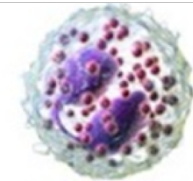
which perforate cell membranes

➤ Consequently, they function as the primary response to large multicellular parasites (e.g. helminth infections)

➤ Analogy: Fumigator – specialized to deal with pests / parasites (e.g. helminths) by releasing chemical products



eosinophil



Eosinophil

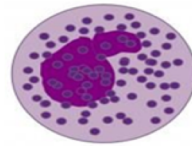
➤ **Basophil**

➤ Basophils are chiefly responsible for initiating inflammatory responses by releasing the chemicals histamine and heparin

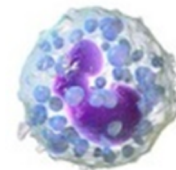
➤ Functionally they are similar to mast cells, however they circulate in the bloodstream whereas mast cells are localized .

➤ Because they promote inflammation, they are common contributors to allergic responses

➤ Analogy: Fireman – the leukocyte involved when a region is inflamed (‘in flames’)



basophil



Basophil

➤ **Monocyte**

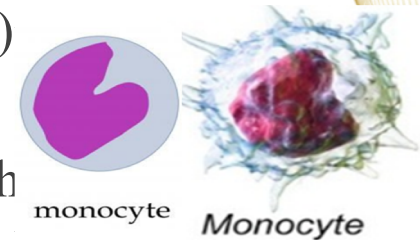
➤ Monocytes are the largest type of leukocyte and share phagocytosis duties with neutrophils

➤ They are slower to respond than neutrophils but are longer lastinas they can renew their lysosomes for continued digestion

➤ Monocytes will differentiate into two types of cells in response to p athogenic infection – macrophages and dendritic cells

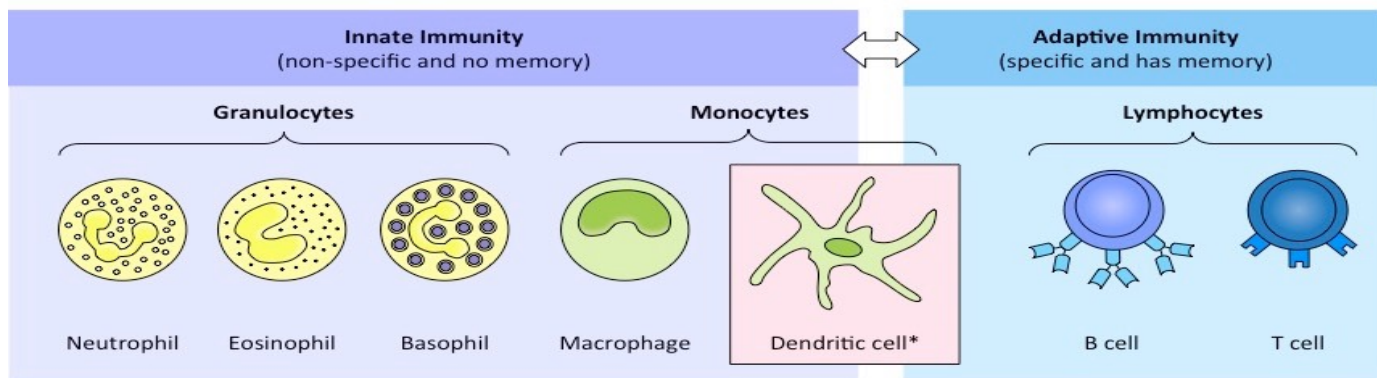
- Macrophages will remain in the tissue and phagocytose, whereas dendritic cells present antigen fragments to lymphocytes
- Analogy: Riot police (macrophage) – slower to respond than standard police but better prepared and survives for longer
- Analogy: Signalman (dendritic cell) – identifies the pathogen and sends signals to the appropriate special forces (lymphocytes)

➤ **Lymphocyte** : Lymphocytes are responsible for the production of antibodies which target specific antigens present on pathogens



- They are more common in the lymphatic system than blood and are slowest to respond (requiring antigen presentation)
- Lymphocytes include B cells (which become antibody-secreting plasma cells) and T cells (which mediate B cell activity)

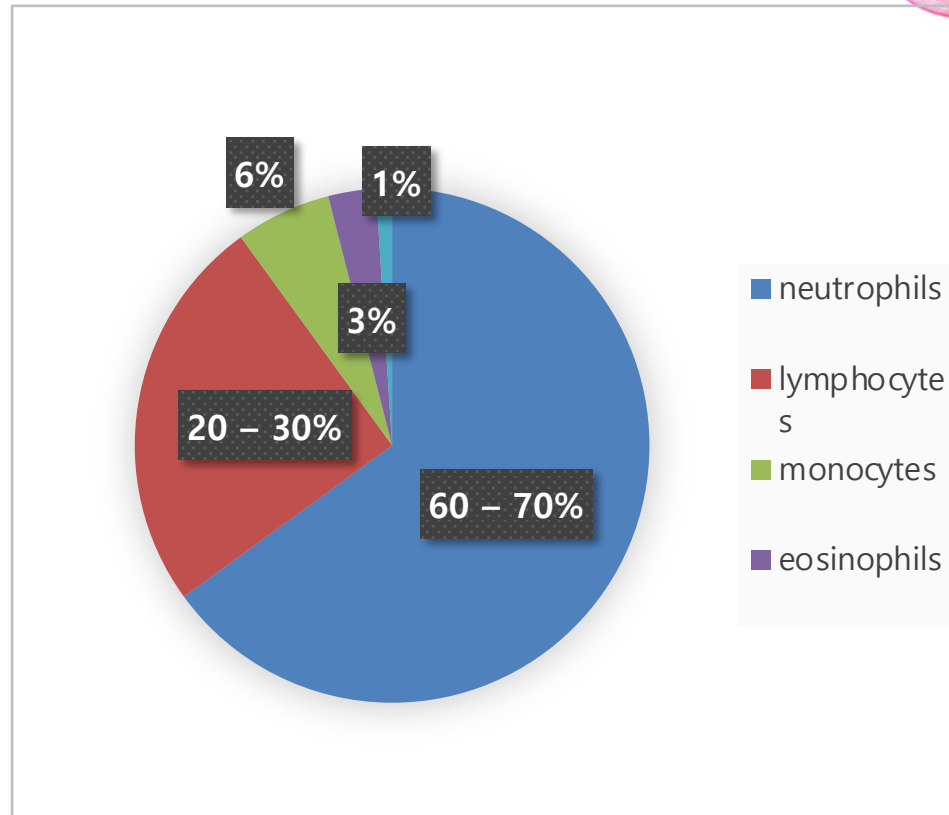
- Lymphocytes are also involved in the destruction of virus-infected body cells (via cytotoxic T cells and natural killer cells)
- Analogy: Special forces / superheroes – takes longest to mobilize but specially trained to target specific pathogens



* Dendritic cells form the bridge between the innate and adaptive immune response (via antigen presentation to lymphocytes)



The percentage of leukocytes

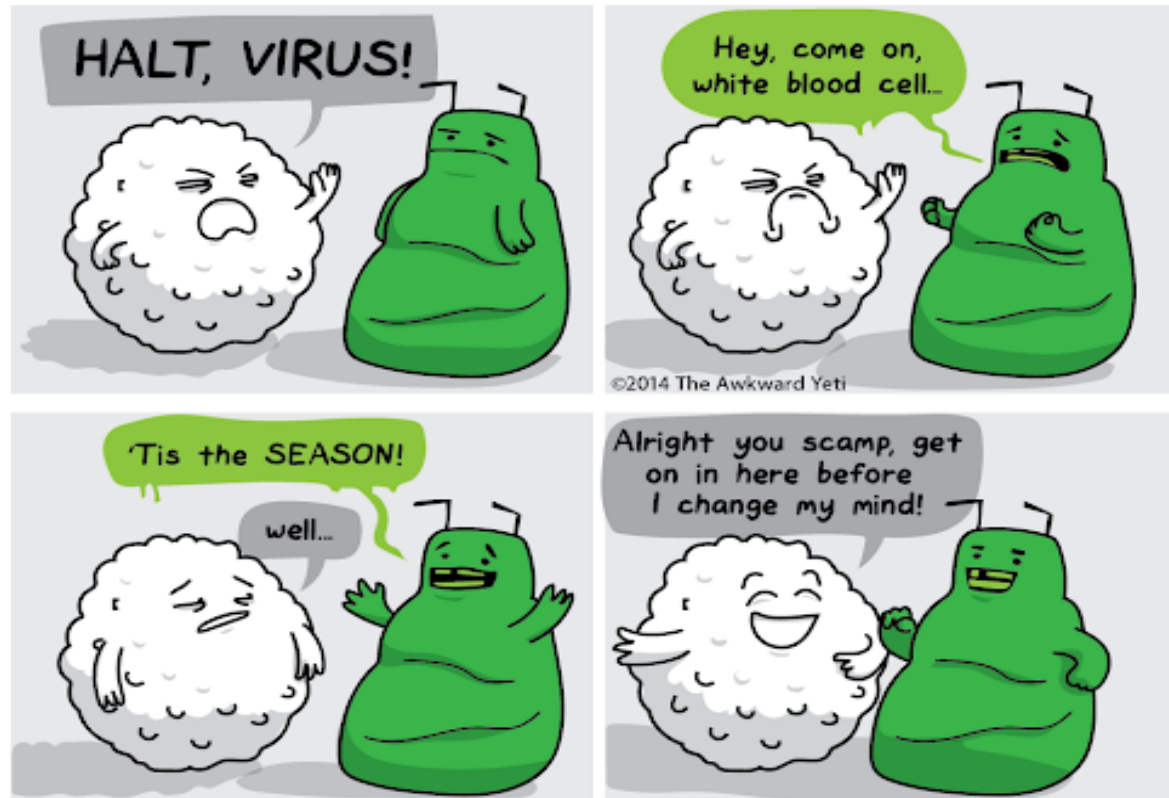


- **Neutrophils (roughly 60 – 70%)**
- **Lymphocytes (roughly 20 – 30%)**
- **Monocytes (approximately 1 – 6%)**
- **Eosinophils (approximately 1 – 3%)**
- **Basophils (less than 1%)**

Summary

Leukocytes also known as (white blood cells) are part of the body's immune system which is responsible for getting rid of any foreign body that can enter the system like bacteria and also gets rid of allergies and other illnesses. The difference between WBC and RBC is that red blood cell does not have a nucleus and it has one type and one function in the body but white blood cells have different type each with a different function and that they are five types. Lastly, the majority of white blood cells are neutrophils (60 to 70 %)

Thank you



References:

- <https://ib.bioninja.com.au/standard-level/topic-6-human-physiology/63-defence-against-infection/types-of-leukocytes.html>
- <https://www.findatopdoc.com/Healthy-Living/Leukocytes>
- <https://www.cancer.gov/publications/dictionaries/cancer-terms/def/leukocyte>