Subject: hematology Lab

 Semester: MLT 2nd

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**Section. A**

Explain the following.

**Leukopenia :**

**Leukopenia** (from Greek λευκός (leukos), meaning 'white', and πενία (penia), meaning 'deficiency') is a decrease in the number of leukocytes. Found in the blood, they are the white blood cells, and are the body's primary defense against infection. Thus leukopenia places individuals at increased risk of infection. Symptoms may include mouth or skin sores, sore throat, cough, trouble breathing, feeling light-headed, fever, chills, or body aches.

Neutropenia, a subtype of leukopenia, refers to a decrease in the number of circulating neutrophil granulocytes, the most abundant white blood cells. The terms leukopenia and neutropenia may occasionally be used interchangeably, as the neutrophil count is the most important indicator of infection risk. This should not be confused with agranulocytosis

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**Lymphocytosis**

Lymphocytosis is an increase in the number or proportion of lymphocytes in the blood. Absolute lymphocytosis is the condition where there is an increase in the lymphocyte count beyond the normal range while relative lymphocytosis refers to the condition where the proportion of lymphocytes relative to white blood cell count is above the normal range. In adults, absolute lymphocytosis is present when the lymphocyte count is greater than 4000 per microliter (4.0 x 109/L), in older children greater than 7000 per microliter and in infants greater than 9000 per microliter. Lymphocytes normally represent 20% to 40% of circulating white blood cells. When the percentage of lymphocytes exceeds 40%, it is recognized as relative lymphocytosis.

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**Lymphopenia**

A condition in which there is a lower-than-normal number of lymphocytes (a type of white blood cell) in the blood. Also called lymphocytic leukopenia and lymphocytopenia.

Lymphopenia (also known as lymphocytopenia) is a term used to describe the state where you have a reduced level of a certain type of blood cell called a lymphocyte. Lymphocytes are one of three types of white blood cells (known as leukocytes) found in the blood. Leukocytes function as part of our body’s first-line immune defense against disease-causing pathogens such as bacteria, viruses, and parasites.1﻿

Lymphopenia is most often caused by infection, including the flu, and will usually recover on its own once the infection has cleared. In cases where the cause is idiopathic (of unknown origin), it may suggest a more serious underlying condition.

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**Basophilia**

Basophilia is the condition of having greater than 200 basophils/μL in the venous blood.

Basophils are the least numerous of the myelogenous cells, and it is rare for their numbers to be abnormally high without changes to other blood components. Rather, basophilia is most often coupled with other white blood cell conditions such as eosinophilia- high levels of eosinophils in the blood. Basophils are easily identifiable by a blue coloration of the granules within each cell, marking them as granulocytes, in addition to segmented nuclei.

Basophils are typically the least numerous myeloid cells seen in a peripheral blood smear. Their numerous dark azurophilic granules easily distinguish them.

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**Nutrophelia**

Neutrophilia (also called neutrophil leukocytosis or occasionally neutrocytosis) is leukocytosis of neutrophils, that is, a high number of neutrophils in the blood Because neutrophils are the main type of granulocytes, mentions of granulocytosis often overlap in meaning with neutrophilia. The opposite of neutrophilia is neutropenia.

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**Thrombocytosis**

Thrombocythemia is a condition of high platelet (thrombocyte) count in the blood. Normal count is in the range of 150,000 to 450,000 platelets per microlitre of blood but investigation is only considered if the upper limit exceeds 750,000.

When the cause is unknown, the term thrombocythemia is used, as either primary thrombocythyemia or essential thrombocythemia. The condition arises from a fault in the bone marrow cells that overproduce the platelets. The cause of the fault is unknown, and this type is not common.

When the cause is known such as another disorder or disease, the term thrombocytosis is preferred, as either secondary or reactive thrombocytosis. Reactive thrombocytosis is the most common type and though it can often have no symptoms it can sometimes predispose to thrombosis. In contrast, thrombocytopenia refers to abnormally low blood platelet numbers in the blood.

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**Thrombocytopenia**

Thrombocytopenia is a condition characterized by abnormally low levels of thrombocytes, also known as platelets, in the blood. A normal human platelet count ranges from 150,000 to 450,000 platelets per microliter of blood. These limits are determined by the 2.5th lower and upper percentiles, so values outside this range do not necessarily indicate disease. One common definition of thrombocytopenia requiring emergency treatment is a platelet count below 50,000 per microliter. Thrombocytopenia can be contrasted with thrombocytosis, an abnormally high level of platelets in the blood.

A low platelet count. Platelets are irregular, disc-shaped element in the blood that assists in blood clotting. thrombocytopenia can arise due to decreased production of platelets in the bone marrow or increased breakdown of platelets in the bloodstream, spleen, or liver. Thrombocytopenia is characterized by easy bruising and increased bleeding.

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**Polycythemia**

Polycythemia (also known as polycythaemia or polyglobulia) is a disease state in which the hematocrit (the volume percentage of red blood cells in the blood) and/or hemoglobin concentration are elevated in peripheral blood.

It can be due to an increase in the number of red blood cells ("absolute polycythemia") or to a decrease in the volume of plasma ("relative polycythemia").Polycythemia is sometimes called erythrocytosis, but the terms are not synonymous, because polycythemia refers to any increase in red blood cells, whereas erythrocytosis only refers to a documented increase of red cell mass.

The emergency treatment of polycythemia (e.g., in hyperviscosity or thrombosis) is by phlebotomy (removal of blood from the circulation). Depending on the underlying cause, phlebotomy may also be used on a regular basis to reduce the hematocrit. Cytostatics such as busulfan and hydroxyurea are sometimes used for long-term management of polycythemia.

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**Anemia**

Anemia is a condition in which you lack enough healthy red blood cells to carry adequate oxygen to your body's tissues. Having anemia can make you feel tired and weak. There are many forms of anemia, each with its own cause. Anemia can be temporary or long term, and it can range from mild to severe.

Anemia is a condition in which you lack enough healthy red blood cells to carry adequate oxygen to your body's tissues. Anemia is defined as a low number of red blood cells. In a routine blood test, anemia is reported as a low hemoglobin or hematocrit. Hemoglobin is the main protein in your red blood cells. It carries oxygen, and delivers it throughout your body. If you have anemia, your hemoglobin level will be low too. If it is low enough, your tissues or organs may not get enough oxygen. Symptoms of anemia -- like fatigue or pain -- happen because your organs aren't getting what they need to work the way they should. Anemia happens when the number of healthy red blood cells in your body is too low. Red blood cells carry oxygen to all of the body’s tissues, so a low red blood cell count indicates that the amount of oxygen in your blood is lower than it should be.

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**Locytosis**

Leukocytosis is a condition in which the white cell (leukocyte count) is above the normal range in the blood. It is frequently a sign of an inflammatory response, most commonly the result of infection, but may also occur following certain parasitic infections or bone tumors as well as leukemia. It may also occur after strenuous exercise, convulsions such as epilepsy, emotional stress, pregnancy and labor, anesthesia, as a side effect of medication (e.g., lithium), and epinephrine administration. Leukocyte is another name for white blood cell (WBC). These are the cells in your blood that help your body fight infections and some diseases.

When the number of white cells in your blood is higher than normal, it’s called leukocytosis. This usually happens because you’re sick, but sometimes it’s just a sign that your body is stressed.

Leukocytosis is a condition in which the white cell (leukocyte count) is above the normal range in the blood. It is frequently a sign of an inflammatory response, most commonly the result of infection, but may also occur following certain parasitic infections or bone tumors as well as leukemia.

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