CHAPTER VII

HEMATOLOGY

VOCABULARY

Agglutination:	Clumping of recipient's blood cells when incompatible bloods are mixed
Bilirubin:	A bile pigment; a breakdown product of heme
blast:	An immature stage in cellular development before appearance of definitive characteristics of a cell
Blood corpuscles:	Formed elements of the blood; red and white blood cells
Coagulable: (Coagulability)	Susceptible of being coagulated (opp.: incoagulable)
Coagulant:	Promoting or making possible the coagulation of blood
Coagulation: (adj: coagulative)	The process of clot formation
Coagulum: (Clot)	A semisolidified mass, as of blood or lymph
Commensal: (n: commensalism)	An organism living on or within another, but not causing injury
Commensalism:	Living together of two dissimilar organisms one gains from the association while the other is neither harmed nor benefited
Corpuscle: (adj: corpuscular)	Any small mass or body
Donor:	A person who donates blood or an organ
Edema:	The presence of abnormally large amounts of fluids in the intercellular tissue spaces of the body
Exacerbation:	Increase in the severity of a disease or any of its symptoms
Fibrin degration products (FDPs):	Breakdown products of fibrin
Fibrin:	Protein threads that form the basis of a blood clot
Fibrinogen:	Plasma protein that is converted to fibrin in the clotting process

Formed elements:	The cellular elements in the blood
Hemoglobin:	An oxygen-carrying pigment of red blood corpuscles
Heparin:	A substance that renders the blood incoagulable
Immune (n: immunity)	Being highly resistant to a disease
Infection:	Invasion and multiplication of microorganism in body tissues
Infective: (Infectious)	Capable of producing infection
Infestation:	Parasitic invasion of the tissues or organs
Infusion:	The therapeutic introduction of a fluid other than blood into a vein
Intubation:	Insertion of a tube into a body canal or cavity (e.g. endotracheal; nasogastric)
Myeloid:	Derived from bone marrow
Parasite (adj: parasitic) (n: parasitism)	An organism which lives upon or within another living organism at whose expense it obtains some advantage
Plasma:	The fluid portion of the blood in which particulate components are suspended
Prothrombin:	Plasma protein which is converted to thrombin in the clotting process
Recipient:	One who receives, as in blood transfusion or organ graft
Relapse:	The return of a disease after its apparent cessation
Remission: (adj: remittent)	Diminution of symptoms of a disease
Reticulocyte:	Developing red blood cell with a network of granules in its cytoplasm

Rh factor:	An antigen located on the surface of red blood cells If present, the person is said to be Rh-positive; if not, the person is said to be Rh-negative
Serum: (pl.: sera) (adj: serumal)	The clear liquid which separates from the blood when it is allowed to clot completely
Sign:	Any objective evidence of disease, as perceived by the physician
Stem cell:	A cell in the bone marrow that gives rise to different types of blood cells
Symptom: (adj: symptomatic)	Any subjective evidence of disease, as perceived by the patient.
Thrombin:	An enzyme that helps to convert fibrinogen to fibrin during coagulation
Thromboplastin:	A clotting factor that, in combination with calcium, stimulates the conversion of prothrombin into thrombin
Transfusion:	Introduction of whole blood into a vein

COMBINING FORMS

COMBINING FORM	DENOTING RELATIONSHIP TO	COMBINED WITH	MEANING	TERM	MEANING
Angio__	Vessel (usually a blood vessel)	__genesis	Formation	Angiogenesis (adj: angiogenic)	The development of vessels
Angio__	Blood vessel	__graphy	Record	Angiography	Radiographic visualization of blood vessels after injecting a contrast material
Angio__	Blood vessel	__oma	Tumor	Angioma	A tumor whose cells tend to form blood vessel
Angio__	Blood vessel	__plasty	Surgical repair	Angioplasty	Angiography for elimination of narrowness in an artery
Bio___	Life	__opsy	Viewing	Biopsy	Removal and examination of tissue from living body
Erythro__	Red	__cyte	Cell	Erythrocyte (adj: erythrocytic)	Red blood cells or corpuscles
Erythro__	Red	__cytosis	Increase in the number of cells	Erythrocytosis	Increase in the total number of red blood cells
Erythro__	Red	__penia	Decrease in number	Erythropenia (erythrocytopenia)	Deficiency in the number of erythrocytes
Erythro__	Red	__poiesis __genesis	Production	Erythropoiesis Erythrogenesis (adj: erythropoietic)	The production of erythrocytes
Granulo__	Granulocyte	__poiesis	Formation	Granulopoiesis	Granulocyte formation
Granulo__	Granulocyte	__cytopenia	Defficiency in the cellular elements of the blood	Granulocytopenia (Agranulocytosis) (Agranulosis)	Reduced granulocyte number
Hemato__	Blood	__oma	Tumor	Hematoma	A localized collection of blood

COMBINING FORM	DENOTING RELATIONSHIP TO	COMBINED WITH	MEANING	TERM	MEANING
Iatro__	Physician	__genic	Produced by	Iatrogenic	Any adverse condition resulting from treatment by a physician
Leuko__	White	__cyte	Cell	Leukocyte (adj: leukocytic)	White blood cell
Leuko__	White	__cytosis	Increase in cell number	Leukocytosis	Increase in the number of leukocytes
Leuko__	White	__emia	blood	Leukemia (Leucemia)	Neoplasm of the marrow stem cells
Leukocyto__	White blood cell	__genesis	Formation	Leukocytogenesis Leukopoieisis Leukocytopoieisis	The formation of leukocytes
Leukocyto__	White blood cell	__penia	Decrease in number	Leukocytopenia (leucopenia) (adj: leukopenic)	Reduction in the number of leukocytes
Leukocyto__	White blood cell	__poiesis	Production	Leukocytopoiesis	Production of white blood cells
Lympho__	Lymphocyte	__poiesis	Formation	Lymphopoiesis Lymphocytopoieisis	Lymphocytes formation Development of lymphatic tissue
Mono__	One	__cyte	Cell	Monocyte (adj: monocytic)	A mononuclear phagocytic leukocyte
Myelo	Bone marrow	__cyte	Cell	Myelocyte	Immature form in the leukocytic series
Myelo__	Bone marrow	__cytosis	Excessive number of cells	Myelocytosis (Myelosis)	Excessive number of myelocytes in the blood
Necro__	Death	__sis	Condition	Necrosis (pl: necroses) (adj: necrotic)	Morphological changes indicative of cell death
Necro__	Death	__opsy	Viewing	Necropsy (Autopsy)	Examination of a body after death
Phago__	Swallow	__cyte	Cell	Phagocyte (n: phagocytosis) (adj: phagocytic)	Any cell capable of engulfing particulate matter

COMBINING FORM	DENOTING RELATIONSHIP TO	COMBINED WITH	MEANING	TERM	MEANING
Phlebo__	Vein	Thrombosis	Clot	Phlebothrombosis	Presence of clot in a vein
Thrombo__	Platelet	__poiesis	Formation	Thrombopoiesis (Thrombocytopoiesis)	Platelet formation
Thrombo__	Clot; thrombus	__cyte	Cell	Thrombocyte (platelet)	A blood platelet
Thrombo__	Thrombus (pl: thrombi)	__cytosis	Increase in number of cells	Thrombocytosis	Increased number of platelets
Thrombo__	Thrombus	__genesis	Formation	Thrombogenesis	The formation of blood clots
Thrombo__	Thrombus	__osis	Disease process	Thrombosis (adj: thrombotic)	Formation or presence of a thrombus
Thrombo__	Clot (thrombus)	Phlebitis	Inflammation of a vein	Thrombophlebitis	Inflammation of a vein associated with thrombus formation
Thrombocyto__	Thrombocyte	__penia	Decrease in number	Thrombocytopenia	Decrease in the number of blood platelets
Thrombocyto__	Thrombocyte	__poiesis	Production	Thrombocytopoiesis Thrombopoieisis	The production of blood platelets
Thrombocyto__	Thrombocyte	__pathy	Disease	Thrombocytopathy (thrombocytopathia) (adj: thrombocytopathic)	Hemorrhagic disorder characterized by platelets with defective clot-promoting activity

PREFIXES

PREFIX	MEANING	COMBINED WITH	MEANING	TERM	MEANING
A__	Not	nuclear	Having a nucleus	Anuclear (anucleated)	Having no nuclei
An__	No	Oxo__	Oxygen	Anoxemia (adj: anoxemic)	Reduction of oxygen content of the blood below normal level
Anti__	Against	body	Mass or collection of material	Antibody	An immunoglobulin which interacts with the antigen that induced its synthesis
Anti__	Against	__gen	To produce	Antigen (adj: antigenic)	Any substance which is capable of inducing formation of antibodies
Anti__	Against	coagulant	Promoting coagulation of blood	Anticoagulant	Serving to prevent the coagulation of blood
Ben__	Good	__ignis	Fire	Benign	Non cancerous
Extra__	Outside	cellular	Pertaining to a cell	Extracellular	Outside the cell
In__	Not	compatible (n: compatibility)	Capable of mutual coexistence	Incompatible (n: incompatibility)	Mutually repellant; not suitable for mutual coexistence
Inter__	In between	cellular	Pertaining to a cell	Intercellular	Between the cells
Intra__	Within	cellular	Pertaining to a cell	Intracellular	Within a cell
Mal__	Bad	__ignis	Fire	Malignant (n: malignancy)	Cancerous
Meta__	Beyond	stasis	Control	Metastasis (pl.: metastases) (adj: metastatic)	Spread of a malignant tumor to a secondary location
Neo	New	__plasm	Growth	Neoplasm	Any new and abnormal growth
Pan__	All	cytopenia	Decrease in number of cells	Pancytopenia	Deficiency of all cell elements of the blood
Per__	Through	Cutaneous	Skin	Percutaneous	Through the skin
Poly__	Many	morphonuclear	Pertaining to form of nucleus	Polymorphonuclear	Having a nucleus deeply lobed that it appears to be multiple
Post__	After	Mortem	Death	Postmortem	Occurring after death
Pre__	Before	Cancerous	Malignant	Precancerous	Pertaining to a pathologic process that tends to become malignant

SUFFIXES

SUFFIX	MEANING	COMBINED WITH	MEANING	TERM	MEANING
__blast	Immature cell	Erythro__	Red	Erythroblast	Nucleated erythrocyte
__blast	Immature cell	Lympho__	Lymph	Lymphoblast (lymphocytoblast)	Immature lymphocyte (adj: lymphoblastic)
__blast	Immature cell	Myelo__	Bone marrow	Myeloblast (adj. Myeloblastic)	Immature cell in the bone marrow which develops into granular leukocytes
__pathy	Disease	Coagulo__	Coagulation	Coagulopathy	Any disorder of blood coagulation
__penia	Decrease in number	Neutro__	Neutrophil	Neutropenia Neutrophilopenia	A decrease in the number of neutrophilic leukocytes
__penia	Decrease in number	Eosino__	Eosinophil	Eosinopenia hypoeosinophilia	Abnormal deficiency of eosinophilic leukocytes in the blood
__penia	Decrease in number	Monocyto__	Monocyte	Monocytopenia (opp: monocytosis)	Decrease in the number of monocytes
__penia	Decrease in number	Lymphocyto__	Lymphocyte	Lymphocytopenia Lymphopenia (opp: lymphocytosis)	Reduction in the number of lymphocytes
__phagia phagy)	Swallowing	Macro__	Large	Macrophage	Large phagocytic cell
__phil	Has affinity for	Neutro__	Neutral	Neutrophil (neutrocyte) (adj: neutrophilic)	A leukocyte with a 3 to 5 lobed nucleus
__phil	Has affinity for	Eosino__	Eosin: rose-colored dye	Eosinophil Eosinocyte (eosinophile) (acidocyte) (adj: eosinophilic) (eosinophilous)	A granular leukocyte, with bilobed nucleus and eosinophilic cytoplasmic granules
__phil	Has affinity for	Baso__	Base (basic dye: bluish black)	Basophil (adj: Basophilic; basophilous)	A granular leukocyte with constricted nucleus and basophilic cytoplasmic granules
__philia	increase in number	Neutro__	Neutral	Neutrophilia Neurtrophilic Leukocytosis	Increase in the number of neutrophils in the blood

SUFFIX	MEANING	COMBINED WITH	MEANING	TERM	MEANING
__philia	Increase in number	Eosino	Eosin	Eosinophilia Eosinophilic leukocytosis (eosinophilosis)	Increase in the number of eosinophils
__philia	Increase in number	Baso__	Base	Basophilia (Basocytosis; basophilic leukocytosis; basophilism)	Abnormal increase of basophil cells
__ poiesis	Formation	Hemato__	Blood	Hematopoiesis (adj: hematopoeitic)	The formation and development of blood cells
__ poiesis	Formation	Monocyto__	Monocyte	Monocytopoiesis	Formation of monocytes
__ poiesis	Formation	Lymphocyto__	Lymphocyte	Lymphocytopoiesis (adj: lymphocytopoietic)	Development of lymphocytes
__ poiesis	Formation	Myelo__	Bone marrow	Myelopoiesis Myelogenesis	Formation of bone marrow or the cells that arise from it
__ poietin	Regulating number of blood cell types	Erythro__	Red	Erythropoietin (Hematopoietin)	Hormone stimulating erythropoiesis
__stasis	Control	Hemo__	Blood	Hemostasis (hemostasia) (adj: hemostatic)	Arrest of bleeding

ABBREVIATIONS

baso:	basophils
diff:	differential count (white blood cells)
eos:	eosinophils
Hgb; Hb:	Hemoglobin
Lymphs:	Lymphocytes
Mono:	Monocyte
Poly:	Polymorphonuclear leukocyte

VOCABULARY

Albumin:	Protein found in the blood; maintains the proper amount of water in the blood
Bleeding time:	The time it takes for a small puncture wound to stop bleeding (<8 minutes)
Blood Groups:	Human blood falls into 4 main groups: A, B, AB and O. Each blood group has a combination of antigens on the blood cells that are inherited, and antibodies in plasma
Coagulation (Clotting) time:	Time required for venous blood to clot in a test tube (<15 minutes)
Complete Blood Count (CBC):	Includes RBCs count, WBC count with differential, platelet count, Hb and, Hematocrit estimations and red cell indices
Erythrocyte Sedimentation Rate: (Sed rate or ESR):	Speed with which erythrocytes settle out of plasma
Formed elements:	The cellular elements in the blood
Globulin:	Plasma protein which is separated by electrophoresis into alpha, beta and gamma globulin
Hemochromatosis: (adj: Hemochromatotic)	Excessive deposits of iron throughout the body especially in the liver, heart and pancreas
Immune reaction:	Process by which antibody neutralizes or inactivates an antigen
Immunoglobulin:	A protein (globulin) with antibody activity e.g. IgG, IgM, IgA, IGE, IGD
Lymphoma:	Malignant tumor of lymphoid tissue
Mononucleosis:	An infectious disease evidenced by lymphocytosis and enlarged cervical lymph nodes
Multiple Myeloma:	Malignant tumor of plasma cells in bone marrow

Partial thromboplastin time:	Measures the presence of factors that act at early points in the coagulation pathways
Prothrombin time: (PT)	It measures the time that elapses between the addition of tissue extract and calcium to a plasma sample and the appearance of a visible clot.
Purpura:	Multiple pinpoint hemorrhages and accumulation of blood under the skin due to platelet deficiency
Type A:	Contains A antigen and anti-B antibody
Type AB: (Universal Recipients)	Contains A & B antigens, and no anti-A or anti-B antibodies
Type B:	Contains B antigen and anti-A antibody
Type O: (Universal donors)	Contains no A & B antigens and both Anti-A and Anti-B antibodies

COMBINING FORMS

COMBINING FORM	DENOTING RELATIONSHIP TO	COMBINED WITH	MEANING	TERM	MEANING
Cyto__	Cell	__logy	Study of	Cytology (adj: cytologic)	The study of cells, their origin, structure, function and pathology
Cyto__	Cell	__logist	Specialist in	Cytologist	Specialist in cytology
Cyto__	Cell	__lysin	Producing dissolution	Cytolysin	A substance or antibody that produces dissolution of cells
Cyto__	Cell	__lysis	Dissolution	Cytolysis (adj: cytolytic)	Dissolution or destruction of cells
Cyto__	Cell	__metry	Measurement	Cytometry	Counting of blood cells
Cyto__	Cell	__necrosis	Death	Cytonecrosis	Death of individual cells
Cyto__	Cell	__ pathogenesis	Production of pathological changes	Cytopathogenesis (adj: cytopathogenetic)	The production of pathological changes in cells
Cyto__	Cell	__pathology	Study of disease processes	Cytopathology (Cellular pathology)	Study of cells in disease
Cyto__	Cell	__stasis	Stoppage or diminution of flow	Cytostasis (adj: cytostatic)	The closure of capillaries by white blood cells in early stages of inflammation
Cyto__	Cell	__taxis	Movement	Cytotaxis (adj: cytotactic)	The movement and arrangement of cells with respect to a specific source of stimulation
Hemato__	Blood	Pathology	Study of diseases	Hematopathology	Study of diseases of the blood
Hemato__	Blood	__sepsis (adj: septic)	Presence of pathogenic microorganisms or their toxins	Hematosepsis (Septicemia) (adj: hematoseptic; septicemic)	Presence of pathogenic microorganisms or their toxins in the blood
Hemo__	Blood	__lysis	Breakdown	Hemolysis (Hematolysis) (adj: Hemolytic)	Destruction of red blood cells, separation of hemoglobin from rbcs, and its appearance in the plasma
Hemo__	Blood	__lysin	Dissolving	Hemolysin	A substance which liberates hemoglobin from red blood corpuscles

COMBINING FORM	DENOTING RELATIONSHIP TO	COMBINED WITH	MEANING	TERM	MEANING
Hemo__	Blood	__phagocyte	A cell that ingests other cells	Hemophagocyte (Hematophagocyte) Hemophage	A phagocyte which destroys blood cells
Hemo__	Blood	__cytometer	A device for counting cells	Hemocytometer	A device for counting blood cells
Hemoglobino__	Hemoglobin	__metry	Measurement	Hemoglobinometry	Measurement of the hemoglobin of the blood
Iso__	Equal; alike	Cytosis	Increase in number of cells	Isocytosis	Equality of the size of cells (rbc[s])
Iso__	Equal; alike	Chromatic	Color	Ischromatic	Of same color through out
Karyo__	Nucleus	__cyte	Cell	Karyocyte	A nucleated cell
Macro__	Large	__cyte	Cell	Macrocyte	An abnormally large erythrocyte
Mega__	Great size	Karyocyte	A nucleated cell	Megakaryocyte	The giant cell of bone marrow from which mature blood platelets originate
Megakaryo__	Large nucleus	Cystosis	Increase in number of cells	Megakaryocytosis	The presence of megakaryocytes in the blood or of excessive numbers in the bone marrow
Megakaryo__	Large nucleus	__blast	Immature cell	Megakaryoblast	The cell from which the mature megakaryocyte is derived
Megalo__	Great size	__blast	Immature cell	Megaloblast	Erythrocyte precursor
Normo__	Same	Chromo	Color	Normochromia	Normal color throughout
Poikilo__	Varied or irregular	__cytosis	Increase in number of cells	Poikilocytosis	The presence in the blood of erythrocytes showing abnormal variation in shape

PREFIXES

PREFIX	MEANING	COMBINED WITH	MEANING	TERM	MEANING
A__	Negative	__plasia	Development	Aplasia (Agenesis) (adj: aplastic)	Lack of development of an organ or tissue
An__	Negative	__emia	Blood state	Anemia (adj: anemic)	Reduction below normal of the number of rbcs per cu mm, in the quantity of Hb, or in the volume of packed r.b.c. per 100 ml of blood
An__	Negative	Isocytosis	Equality of size of cells especially red blood corpuscles	Anisocytosis	Presence in the blood of erythrocytes showing excessive variations in size
An__	Negative	Isochromia	Of same color throughout	Anisochromia (Anisochromatic)	Variation in the color of erythrocytes due to unequal Hb. content
Extra__	Outside	Vas	Vessel	Extravasated Extravasation (adj: Extravascular)	Escaped of blood from a vessel into the tissues
Hyper__	Increased	Chromo__	Color	Hyperchromia (adj:Hyperchromasia Hyperchromatism) (adj:Hyperchromic)	Abnormal increase in the hemoglobin content of erythrocytes
Hypo__	Reduced	Chromo__	Color	Hypochromia (Hypochromasia) (Hypochromatism) (adj: hypochromic)	Abnormal decrease in the hemoglobin content of the erythrocytes
Hypo__	Decreased	Eosinophilia	State of eosinophils in the blood	Hypoeosinophilia (Eosinopenia)	Deficiency of eosinophils in the blood
Poly	Several	Chromo__	Color	Polychromasia	Blue and pink color in the red cell

VOCABULARY

Abscess:	A localized collection of pus buried in tissues or organs
Acute:	Having a short and relatively severe course
Asphyxia: (adj: asphyxial)	Pathological changes caused by lack of oxygen in respired air
Chronic:	Persisting over a long period of time
Debris:	An accumulation of fragments of necrotic tissue or foreign material
Degeneration: (adj: degenerative)	Deterioration: change of a tissue to a lower or less functionally active form
Effusion:	Escape of fluid into a part or tissue
Empyema: (adj: empyemic)	Abscess; pleural effusion containing pus; also called purulent or suppurative pleurisy and pyothorax
Exudate:	Fluid with high content of proteins and cells, which has escaped from blood vessels and has been deposited in tissue surfaces
Exudation: (adj: exudative)	The escape of fluid, cells and cellular debris from blood vessels
Insidious:	Coming on in a quiet and secret way; of gradual and subtle development
Ischemia: (adj: ischemic)	Deficiency of blood in a part, usually due to functional constriction or actual obstruction of a blood vessel
Paraxysmal:	Recurring in paroxysms
Paroxysm:	Sudden recurrence or intensification of symptoms
Sepsis: (adj: septic)	The presence in the blood or other tissues of pathogenic microorganisms or their toxins

Septicemia: (syn: septemia) (adj: septicemic)	Blood poisoning: Systemic disease associated with the presence and persistence of pathogenic microorganisms or their toxins in the blood
Stenosis: (adj: stenotic) (Stricture; constriction)	An abnormal narrowing of a duct or canal
Transudate:	A fluid with low content of protein and cells or solid materials derived from cells, which has been extruded from blood vessels as a result of hydrodynamic forces
Transudation:	The passage of serum or other body fluid through a blood vessel as a result of hydrodynamic forces

ACRONYMS & ABBREVIATIONS

ABO:	The main blood groups
ALL:	Acute Lymphoblastic Leukemia
AML:	Acute Myelogenous Leukemia; Acute Myeloblastic Leukemia
BMT:	Bone Marrow Transplant
CLL:	Chronic Lymphocytic Leukemia
CML:	Chronic Myelogenous (Myelocytic) Leukemia
CSFs:	Colony Stimulating Factors
DIC:	Disseminated Intravascular Coagulation
Epo:	Erythropoietin
G6PD:	Glucose 6-phosphate dehydrogenase
G-CSF:	Granulocyte Colony Stimulating Factor
GM-CSF	Granulocyte Macrophage Colony Stimulating Factor
Hct.	Hematocrit
HDN:	Hemolytic Disease of the newborn
HLA:	Human Leukocyte Antigen
MCH:	Mean Corpuscular Hb; Hb per cell
MCHC:	Mean Corpuscular Hb concentration
MCV:	Mean Corpuscular Volume: Average Volume or size of a single rbc
PT:	Prothrombin Time

ASSIGNMENT # 8

Write the meanings for each of the following terms:

1. Polycythemia vera: (Erythremia) _____
2. Thalassemia: (Thalassanemia) _____
3. Spherocytosis: _____
4. Plasmapheresis: _____
5. Microcytosis: _____
6. Leukemia: _____
7. Aplastic Anemia: _____
8. Hemolytic Anemia: _____
9. Pernicious Anemia: _____
10. Sickle Cell Anemia: _____
11. Hemophilia: _____

ASSIGNMENT # 9

Define briefly, but clearly the following medical terms:

1. Rh factor:
2. Agglutination:
3. Electrophoresis:
4. Candidiasis:
5. Hemochromatosis:
   (Hemosiderosis)
6. Tuberculosis:
7. Immune response:
8. Granulocytosis:
9. Immunoelectrophoresis:
10. Lymphadenopathy:
11. Bone marrow transplantation (BMT):

QUIZ # 22

I. Write a synonym for each of the following terms:

1. Hemolysis : _____
2. Leukopenia : _____
3. Septicemia : _____
4. Hypochromia : _____
5. Hematuria : _____
6. Hematogenesis : _____
7. Hematopoietin : _____
8. Neutropenia : _____

II. Write an opposite term for each of the following :

9. Universal recipient : _____ _____ (_____ _____)
10. Macrocyte : _____
11. Isocytosis : _____
12. Sideropenia : _____
13. Hematopenia : _____
14. Leukocytosis : _____
15. Lymphocytosis : _____
16. Granulocytosis : _____
17. Thrombocytosis : _____

III. Write the medical term for each of the following meanings:

18. A protein with antibody activity: _____
19. Malignant tumor of bone plasma cells: _____ _____
20. An infectious disease evidenced by lymphocytosis and enlarged cervical lymph nodes: _____
21. Multiple pinpoint hemorrhages: _____
22. It measures the time that elapses between the addition of tissue extract and calcium to a plasma sample and the appearance of a visible clot: _____ _____
23. The flow of blood in the body: _____
24. Counting blood cells: _____
25. The closure of capillaries by wbc in early stages of inflammation: _____
26. The movement and arrangement of cells with respect to a specific source of stimulation: _____
27. The presence in the blood of erythrocytes showing abnormal variations in shape: _____
28. A giant cell of bone marrow from which mature blood platelets originate: _____
29. A condition in which erythrocytes are larger than normal: _____
30. Abnormal increase in the Hb. Content of rbcs: _____
31. Lack of development of an organ or tissue: _____
32. A hematologic disorder caused by alteration in the genetically determined molecular structure: _____

IV. Write the adjective for each of the following terms:

33. Hemochromatosis : _____
34. Septicemia : _____

35. Cytopathogenesis : _____

36. Cytotaxis : _____

37. Normochromia : _____

V. Write the following acronyms and abbreviations in full:

38. ESR : _____ _____ _____ ___

39. CBC : _____ _____ _____ ____

40. ALL : _____ _____ _____ _____

41. BMT : _____ _____ _____ ____

42. MCH : _____ _____ _____ ____

43. MCV : _____ _____ _____ ____

44. PT : _____ _____

DICTATION

1. **Polycythemia Vera** is a **myeloproliferative** disorder of unknown **etiology**, characterized by abnormal **proliferation** of all **hematopoietic** bone marrow elements and an absolute increase in red cell mass and total blood volume. The skin of the face is often ruddy and swollen, and **ecchymoses** are common. Most patients have **splenomegaly**, **leukocytosis**, and **thrombocytosis**. **Hematopoiesis** is also reactive in **extramedullary** sites (liver and spleen), and in time **myelofibrosis** occurs.

2. **Aplastic Anemia** is one of a diverse group of anemias characterized by bone marrow failure with reduction of **hematopoietic** cells and their replacement by fat, resulting in **pancytopenia**, (i.e. anemia, **granulocytopenia** and **thrombocytopenia**). It may be **hereditary**, it may be secondary to causes such as **toxic**, **radiant** or **immunologic** injury to bone marrow stem cells or their **microenvironment**, it may be associated with various diseases or it may be **idiopathic**.

3. **Leukemia** is a **progressive malignant** disease of the blood-forming organs, characterized by distorted **proliferation** and **development** of **leukocytes** and their **precursors** in the blood and **bone marrow**. It is classified according to disease course and degree of cell **differentiation** as **acute** or **chronic**, and according to **predominant** type of cell involved as **myelogenous** or **lymphocytic**.

4. **Pernicious Anemia** is a type of **megaloblastic** anemia caused by impaired **intestinal absorption** of **vitamin** B12 due to **achlorhydria** and **gastric mucosal atrophy**.

Answers to Assignment 8

1. Polycythemia Vera: (Erythremia)	A rare disease in which there is a greatly increased production of red blood cells and to some extent of leukocytes and platelets. The skin becomes flushed, with cyanosis, thrombosis and splenomegaly.
2. Thalassemia: (Thalassanemia)	A group of hemolytic anemias mostly found in Mediterranean region and the Far East, caused by inheritance of abnormal hemoglobin.
3. Spherocytosis: (Microspherocytosis)	The presence in the blood of erythrocytes that is more nearly spherical than biconcave. Characteristically it is hereditary but may also be acquired.
4. Plasmapheresis:	A method of removing a portion of the plasma from circulation. Venesection is performed, the plasma is removed and the red blood cells are returned to the circulation. Used in the treatment of those diseases caused by antibodies circulating in the patient's plasma as well as collection of normal plasma for transfusion.
5. Microcytosis: (Microcythemia)	This term refers to red blood cells that are smaller (micro) than normal size. Also it is related to abnormalities of red blood cell morphology.
6. Leukemia:	A progressive, malignant disease of the blood-forming organs, marked by abnormal proliferation and development of leukocytes and their precursors in the blood and bone marrow.
7. Aplastic Anemia:	The bone marrow is unable to produce blood cells. A rare condition. Without power of development, there is deficiency in either quality or quantity of red corpuscles in the blood.
8. Hemolytic Anemia:	A variety in which there is excessive destruction of red blood corpuscles caused by antibody formation in the blood, blood incompatibility, by drugs, mechanical factors, or by severe toxemia, as in extensive burns.

9. Pernicious Anemia:	A variety caused by the inability of the stomach to secrete the intrinsic factor necessary for the absorption of Vitamin B_{12} from the diet. An anemia due to lack of absorption of Vitamin B_{12} for the formation of red blood cells.
10. Sickle Cell Anemia:	A hereditary hemolytic anemia seen most commonly in black people living in or originating from the Caribbean islands, Africa, Asia, Middle East and the Mediterranean. The red blood cells are sickle-shaped.
11. Hemophilia:	Excessive bleeding caused by a congenital (hereditary) lack of one of the protein substances (Factor VIII) necessary for blood clotting.

Answers to Assignment 9

1. Rh factor:	An antigen found on the surface of red cells of Rh-positive individuals.
2. Agglutination:	Clumping of recipient's blood cells when incompatible bloods are mixed. The product of the reaction seen by the naked eye is called agglutinate.
3. Electrophoresis:	The movement of charged particles suspended in a liquid under the influence of an applied electric field; used to separate substances such as proteins.
4. Candidiasis:	Infection with the genus candida (a yeast-like fungus). This fungus is normally found on mucous membranes, skin and vaginal mucosa. Under certain circumstances (e.g. excessive warmth; administration of birth control pills, antibiotics, corticosteroids, debilitated states; infancy), it can change to a pathogen and cause localized or generalized mucocuaneous disease. Examples are paronychial lesions, lesions in areas of the body where rubbing opposed surfaces is common (e.g. groin, perianal, axillary, inframammary and interdigital), thrush (white plaques attached to oral or vaginal mucous membranes) and vulvovaginitis.
5. Hemochromatosis: (hemosiderosis)	A disorder of iron metabolism marked by excess deposition of iron in the tissues, especially in the liver, heart and pancreas, and by bronze pigmentation of the skin, cirrhosis and diabetes mellitus, and associated bone and joint changes. The hereditary form is called idiopathic (classic) hemochromatosis. The exogenous forms are observed in patients who have transfusions and or iron compounds over a prolonged period of time, resulting in iron overload. It is called bronzed diabetes or iron storage disease.
6. Tuberculosis:	An infectious disease caused by Mycobacterium tuberculosis; lungs are usually involved, but any organ in the body may be affected. Rod-shaped bacteria, called bacilli, invade the lungs, producing small tubercles (meaning swellings) of infection. Early tuberculosis (TB) is usually asymptomatic and is detected on routine chest x-ray. Symptoms of advanced disease are cough, weight loss, night sweats, hemoptysis and pleuritic pain. Antituberculous chemotherapy is effective in most cases. Immunocompromised patients are particularly susceptible to antibiotic-resistant tuberculosis. It is important and often necessary to treat TB with many drugs at the same time to prevent drug resistance. The purified protein derivative test (PPD) is given to most hospital and medical employees because TB can be transmitted easily. Agents such as PPD are applied to the skin with multiple punctures or by intradermal injection (Mantoux test). A local cutaneous inflammatory reaction (redness, swelling) is observed in persons who are sensitive to the test substance. A positive test indicates prior or present infection

7. Immune Response: (Immune reaction)	The body's capacity to resist all types of organisms and toxins that can damage tissue and organs
8. Granulocytosis:	An abnormally large number of granulocytes (neutrophils, basophils, eosinophils) in the blood
9. Immunoelectrophoresis:	A method combining electrophoresis and double diffusion for distinguishing antigenic specifications of proteins and other substances
10. Lymphadenopathy:	Disease of lymph nodes causing their swelling
11. Bone Marrow Transplantation (BMT):	Bone marrow cells from a donor whose tissue and blood cells closely match those of the recipient are infused into a who is being treated for leukemia or aplastic anemia

Answers to Quiz 22

I. Synonyms

1. Hematolysis ; hematocytolysis
2. Leukocytopenia
3. Hematosepsis
4. Hypochromasia
5. Hematouresis
6. Hematopoiesis
7. Erythropoietin
8. Granulocytopenia

II. Opposites

9. Universal donor (Type O)
10. Microcyte
11. Anisocytosis
12. Siderosis
13. Hematocytosis
14. Leukopenia; leukocytopenia
15. Lymphopenia; lymphocytopenia
16. Granulopenia; granulocytopenia
17. Thrombopenia; thrombocytopenia

III. Meanings

18. Immunoglobulin
19. Multiple myeloma
20. Mononucleosis
21. Purpura
22. Prothrombin time
23. Hemokinesis
24. Cytometry
25. Cytostasis
26. Cytotaxis
27. Poikilocytosis
28. Megakaryocyte
29. Macrocytosis
30. Hyperchromia; hyperchromatism
31. Aplasia; agenesis
32. Hemoglobinopathy

IV. Adjectives

33. Hemochromatotic
34. Septicemic
35. Cytopathogenetic
36. Cytotactic
37. Normochromic

V. Acronyms

38. Erythrocyte Sedimentation rate
39. Complete Blood Count
40. Acute Lymphocytic Leukemia
41. Bone Marrow Transplant
42. Mean Corpuscular Hemoglobin
43. Mean Corpuscular Volume
44. Prothrombin Time