Paper DLTO 04: Hematology and Transfusion medicine

THEORY:

A) Hematology:

- Blood--- composition and function, haemopoesis; RBC'S- structure, function and synthesis; Hemoglobin- structure, function, abnormal haemoglobins; Reticulocytes; Study of peripheral blood smear, parasites in blood.
- Hemolytic disorders—classification, general evidence of hemolytic nature of anaemia (screening tests). Hemolytic workup -- Sickling, Osmotic Fragility tests, Heinz bodies, G-6-P-D screening, Hb electrophoresis, Hb-F estimation.
- White blood corpuscles-- Description, morphology, leucopoiesis, Total WBC count and corrected Total WBC count, leucopenia, leucocytosis. Absolute counts—absolute eosinophil count. Differential WBC count. Leukemia, Leukemoid reaction, special stains for leukemias—PAS, Sudan Black, Myeloperoxidase. Bone marrow examination and iron staining of marrow.
- Platelet structure and function--- The normal hemostatic mechanism. Heamorrhagic disorder due to vascular (capillary) defect and platelet abnormalities. Theory of blood coagulation. Coagulation abnormalities—pathogenesis and classification. Laboratory tests and investigations of Bleeding disorders ie. Vascular disorders, platelet disorders, coagulation

B) Transfusion medicine:

- Blood groups- Introduction, ABO and sub groups, basic genetics, antigen and antibodies. ABO grouping techniques, problems in ABO grouping. , Rh blood group—basic genetics, antigen and antibodies, RH grouping techniques, problem in RH grouping. Other blood group systems and their significance.
- Blood banking--- Selection of a blood donor, blood collection. Complications of blood transfusion. Investigations of a mismatched blood transfusion.
- Blood component separation and therapy, Compatibility testing, Antihuman globulin test.
- Organization and administration of a blood bank, FDA rules, blood safety.

PRACTICALS

1) Use and care of microscopes; blood collection.
2) Anticoagulants and study of improved neubaur chamber, erythrocyte count.
3) Haemoglobinometry: Sahli's method
4) Peripheral Blood smear preparations and staining; differential WBC count
5) Peripheral blood smear examination and morphological abnormalities
6) Total WBC count
7) Reticulocyte count
8) Demonstration of Hemolytic workup -- Osmotic fragility test, Heinz bodies, Sickling, G-6-P-D estimation, Hb-electrophoresis, Hb-F estimation.
9) Bone marrow examination- staining of smear, iron staining of marrow, Special stains- PAS, Sudan black, Myeloperoxidase
10) Platelet count
11) BT, CT, CRT
12) Demonstration of Prothrombin time, A.P.P.T and FDP estimation
13) E.S.R, P.C.V, Blood indices
14) ABO grouping and Rh typing
15) Demonstration of Coomb's test, Compatibility testing..