University of Mosul
Lecture No.: 13
College of Veterinary Medicine
Date:
Unit of Scientific Affairs
Website:

Lecture title: Disturbances in circulation

Lecturer Affiliation: Department of pathology and poultry diseases

Summary:
In this portion of General Pathology we will study what can happen when normal circulation and hemostasis are interrupted. It is important to have a good understanding of how fluids normally pass from the vascular system into tissues and back again for the study of disease, understanding the pathogenesis of disease, and treatment of disease processes.

THROMBOSIS

Formation of clot of blood in vascular system in the wall of blood vessel. It occurs due to endothelial injury leading to accumulation of thrombocytes, fibrinogen, erythrocytes and leucocytes.

Etiology

- Injury in endothelium of blood vessels.
- Alteration in blood flow.
- Alteration in composition of blood.

Macroscopic and microscopic features

- Blood clot in wall of blood vessels.
- On removal of clot, rough surface exposed.
- Got may be pale, red or laminated.
- ***Occlusive thrombus*** totally occlude blood vessels.
- ***Mural thrombus*** is on the wall of heart.
- ***Valvular thrombus*** is on valves of heart.
- ***Cardiac thrombus*** is in heart.
- ***Saddle thrombus*** is at the bifurcation of blood vessel just like saddle on back of horse.
- ***Septic thrombus*** contains bacteria.
- Blood clot in blood vessel.
- Attached with wall of blood vessel.
- Alternate, irregular, red and gray areas in thrombi.

EMBOLISM

Presence of foreign body in circulatory system which may cause obstruction in blood vessel.

Etiology

- Thrombus, Fibrin
- Bacteria
- Neoplasm
- Oumps of normal cells
- Fat, Gas
- Parasites

Macroscopic and microscopic features

- Emboli causing obstruction of blood vessels lead to formation of infarct in the area.
- Organ/ tissue becomes pale.
- Parasitic emboli *e.g. Dirofilaria immitis*
- Presence of foreign material in blood.
- Dependent area necrotic due to absence of blood supply.

ISCHEMIA

Ischemia is deficiency of arterial blood in any part of an organ. It is also known as ***local anemia.***

Etiology

- External pressure on artery
- Narrowing/ obliteration of lumen of artery
- Thrombi! Emboli

Macroscopic and microscopic features

- Necrosis of dependent part.
- Occurrence of infarction.
- Dead tissue replaced by fibrous tissue.
- Lesions of infarction

INFARCTION

Local area of necrosis resulting from ischemia. Ischemia is the deficiency of blood due to obstruction in artery.

Etiology

- Thrombi
- Emboli
- Poisons like Fusarium toxins

Macroscopic and microscopic features

- Necrosis in triangular area
- *Red infarct* is observed as red triangle bulky surface.
- *Pale infarct* is gray in colour and seen as triangle depressed surface.
- Necrosis in cone shaped area.
- Obstruction of blood vessels.

EDEMA

Accumulation of excessive fluid in intercellular spaces and/ or in body cavity.

Etiology

- Deficiency of protein.
- Passive hyperemia.
- Increased permeability of capillaries.
- Obstruction of lymphatics.

Macroscopic and microscopic features

- Swelling of tissue/ organ/ body.
- Weight and size of organ increased.
- Colour becomes light.
- Pitting impressions on pressure.
- *Ascites* is accumulation of fluid in peritoneum. It is also known as *hydroperitonium.*
- *Hydropericardium* is fluid accumulation in pericardial sac.
- *Hydrocele* is fluid accumulation in tunica vaginalis of the testicles.

- *Anasarca* is generalized edema of body.
- *Hydrocephalus* is accumulation of fluid in brain.
- *Hydrothorax* is accumulation of fluid in thoracic cavity.
- Inter cellular spaces becomes enlarged.
- Serum/ fluid deposits (pink in colour on H&E. staining) in intercellular spaces.
- Cells separated farther.