

43. **DERMATITIS:** Dermatitis is the inflammation of skin characterized by erythema, serous exudation and infiltration of neutrophils and mononuclear cells.

- Non inflammatory lesion of skin is called **Dermatosis**

#### **Etiology**

- Bacteria, Viruses, Chemicals, Allergy, Trauma, Fungi and their toxins.

#### **Types of dermatitis-Based on nature of exudates**

- Serous dermatitis
- Vesicular dermatitis
- Parasitic dermatitis
- Allergic dermatitis
- Suppurative dermatitis
- Necrotic/ Gangrenous dermatitis

#### **Macroscopic and microscopic features**

- Erythematous patches on skin
- Swelling of skin, itching sensation leads to damage/ scratch due to rubbing.
- Loss of hairs, patches on skin, alopecia.
- Hyperemia
- Serous exudate
- Infiltration of neutrophils and mononuclear cells.
- Presence of fungus in skin scrapings.

- A. Serous dermatitis:** Serous dermatitis is a mildest type of dermatitis and the exudate is serous in nature.

#### **Etiology**

- Physical-Trauma
- Thermal -Sun burn especially in unpigmented animals
- Mild Chemicals

#### **Macroscopic and microscopic features**

- Skin is red and raised due to sponigiosis.
- Sweat and sebum are secreted in large quantity ( Seborrhoea )
- Microscopically, Lesions starts as an erythrema.
- Hyperemia, edema and Infiltration by a few leucocytes are seen.
- Blood vessels show hyperemia

**B. Vesicular dermatitis:** It is an acute type of dermatitis characterized by excessive accumulation of clear fluid in dermis and epidermis leading to vesicle/ blisters formation. It is also known as hydropic dermatitis.

#### **Etiology**

- Intense Sunburn and photosensitization
- Heat
- Foot and Mouth Disease virus
- Pox virus

#### **Macroscopic and microscopic features**

- Erythema and swelling of the affected skin due to edema leads to formation of vesicles or blebs which contains clear fluid. If the roof of the vesicle dies the vesicle may rupture revealing a red base.
- Microscopically, there is hyperemia with edema in the dermis and infiltration by leucocytes. There is accumulation of clear fluid in epidermis and dermis, which is characterized by clear spaces or takes light pink stain of eosin.
- Prickle cells undergo hydropic degeneration which may rupture to form vesicle and bullae. The roof of vesicles is formed by stratum corneum.
- Epidermis shows spongiosis
- Presence of leucocytes in vesicles changes them to pustules.
- Later the pustules may rupture and crust is formed.

**C. Parasitic dermatitis:** It is caused by mites and characterized by hyperkeratosis and inflammation of skin leading to itching, rubbing and scratching.

#### **Macroscopic and microscopic features**

- Hyperkeratosis of skin, dry and scaly appearance of skin.
- Hemorrhage/ trauma due to rubbing/ scratching as a result of intense itching.
- Absence of hairs on lesions.
- Hyperemia and infiltration of neutrophils, lymphocytes, macrophages, eosinophils.
- Presence of mites at the site of lesions

**D. Allergic dermatitis:** This is the inflammation of skin sensitized to certain substances, known as allergens. Such inflammation can be seen as a result of delayed type hypersensitivity (DTH) reaction.

#### **Macroscopic and microscopic features**

- Hyperemia with infiltration of eosinophils and mononuclear cells, Erythema

- Edematous/ nodular swelling, hard to touch, hot and painful.
- Vesicular rash, pruritus, serous exudate.

**E. Gangrenous dermatitis:** Gangrenous dermatitis is the inflammation of skin along with formation of gangrene caused by fungal toxins and characterized by sloughing of skin, dry gangrene with break in epidermis.

#### **Macroscopic and microscopic features**

- Presence of gangrenous inflammation on extremities such as legs, udder, ears, tail, scrotum.
- Sloughing of skin leaving raw surface.
- Sloughing of hoofs with haemorrhage
- Inflammation of skin and invasion by saprophytes causing dissolution of cells/ tissue
- Infiltration of mononuclear cells at the periphery of the lesion.

**F. Pustular or Suppurative dermatitis:**

- Impetigo is a form of pustular dermatitis.

#### **Etiology**

- Physical
- Bacteria
- ✓ Staphylococcus aureus in cows causing mastitis, Streptococcus – rarely
- Viral
- ✓ Dogs Canine distemper
- ✓ Sheep and goats – Contagious pustular dermatitis
- Route of infection
- ✓ Bite wounds in pigs by dogs and other pigs

#### **Gross pathology**

- Pustule may be seen.
- ✓ Pigs: Location - face, snout, ears and over the eyes.
- ✓ Dogs affected with canine distemper pustules are seen under the belly.
- ✓ Cattle: Bacteria – Staphylococcal mastitis. In the udder, the base of teat is the common location of lesion.

#### **Histopathology**

- Pustule contains serofibrinous exudate with neutrophils
- Dermal vessels are congested.

**Eczema:** Eczema is a form of allergic dermatitis of obscure etiology and characterized by erythema, vesicular rash, serous exudate, watery discharge and pruritus.



### **It is of two types-**

- Acute or Moist Eczema
- Chronic or Dry Eczema

Acute or Moist Eczema-Initially, vesicles and bullae are formed which may be infected to produce pustule. Later pustule may dry forming scabs. Microscopically, spongiosis, edema and cellular infiltration in the dermis may be seen.

Chronic or Dry Eczema-Scratching and rubbing of skin lead to thickening of skin with formation of scale, scabs/crusts and fissure. Microscopically, there is hyperkeratosis, acanthosis and infiltration by lymphocytes.

### **Epidermoid Cyst –**

Species affected: Dogs

#### **Pathogenesis**

- If the hair follicular duct is occluded, then the desquamated epithelium and keratin are trapped inside and develop into a cyst and the development of cyst is slow.

#### **Gross pathology**

- Location: If in the dermis, it is fixed. If in the subcutis, it is movable.
- Shape: Round or oval.
- Size: Few millimeters to few centimeters.
- Number of cysts: Solitary, clusters or generalized
- Wall: Thin, Margin: Well demarcated.
- Contents: Color is gray or brown; May contain hair/wool
- Consistency: Semisolid or dry

**Histopathology** - At the centre of cyst, keratin is deposited concentrically.

#### **Dermoid Cyst**

- It is a round or oval soft mobile cyst at the junction of dermis and subcutis.
- Its wall contains skin appendages.
- It communicates to outside through tiny pores.
- It is a benign lesion. It may contain desquamated cells, hairs, keratinized greasy substance, calcium and cholesterol.

#### **Sebaceous Cyst**

- It is a dilatation of duct or sebaceous gland leading to cyst formation.
- It may contain greasy sebum and cholesterol.

#### **Sudoriferous Cyst**

- It is a cyst formed by the occlusion of sweat gland.
- It contains watery fluid.
- The capsule is thin and lined by single layer of columnar or cuboidal epithelium.

**Laminitis (Founder):** Laminitis is inflammation of sensitive laminae of hoof.

### **Occurrence**

- Horses and cattle may be affected
- It may be seen in fore feet, all four feet or occasionally in hind feet
- Can occur in a single foot – usually as a complication of a severe lameness or orthopedic disease

### **Etiology**

- Laminitis may be a local manifestation of a more generalized metabolic disturbance.

#### **Horses**

- Diarrhoea occurring due to excessive ingestion of CHO and use of irritant purgatives like aloes.
- Drinking very cold water after the animal is over heated.
- Long drives / severe exercise on hard roads lead to concussion.
- Standing for long time.
- Fat ponies which are kept at pasture without much exercise develop chronic laminitis.

#### **Cattle**

- Feed allergy caused by Cottonseed cake, mouldy hay and barley (Allergic laminitis)
- Retained placenta, post parturient metritis, mucosal disease and endotoxaemia.

**Cattle and Sheep** - Overfeeding with concentrate

### **Clinical signs**

#### **Horses**

- Onset: Sudden, High temperature, Rapid pulse, Accelerated respiration
- Distress
- Does not like to bear weight on affected limb

#### **Cattle and sheep**

- Depressed, Anorectic, Stands reluctantly
- Hoof (Touch) palpation – Heat is apparent near the coronary band
- Sole of feet has increased sensitivity
- Shifting lameness
- Reluctance to walk
- Each foot once lifted is replaced as quickly as possible

## **Gross pathology**

### **Hoof**

- Acute congestion with venous stasis
  - Pressure of increased blood and edema on sensitive tissue which presses on the tough hoof causes extreme pain.
  - Haemorrhage occur into the sensitive laminae
  - Suppuration occurs in severe conditions
- In cattle and sheep- At the coronary band, blood stained exudate seep
- Hoof: Bands of irregular horn growth
  - Laminitic rings (close at the toe and diverging at the heel) can be seen
  - Narrow and elongated
  - At heel-vertical, At toe – horizontal.
- Sole – Thick, Outline – convex / Flat