CLASSIFICATION & PATHOLOGY OF METRITIS IN ANIMALS

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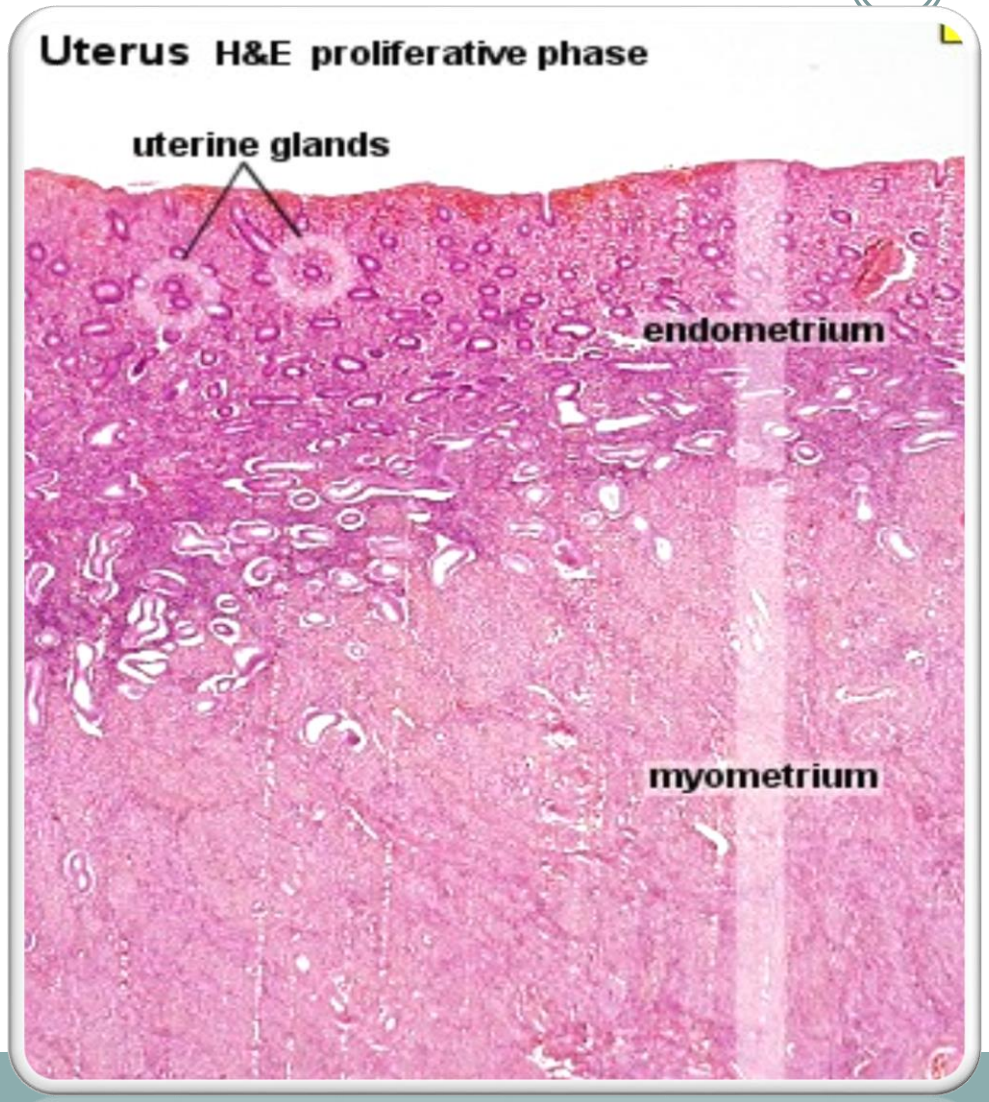
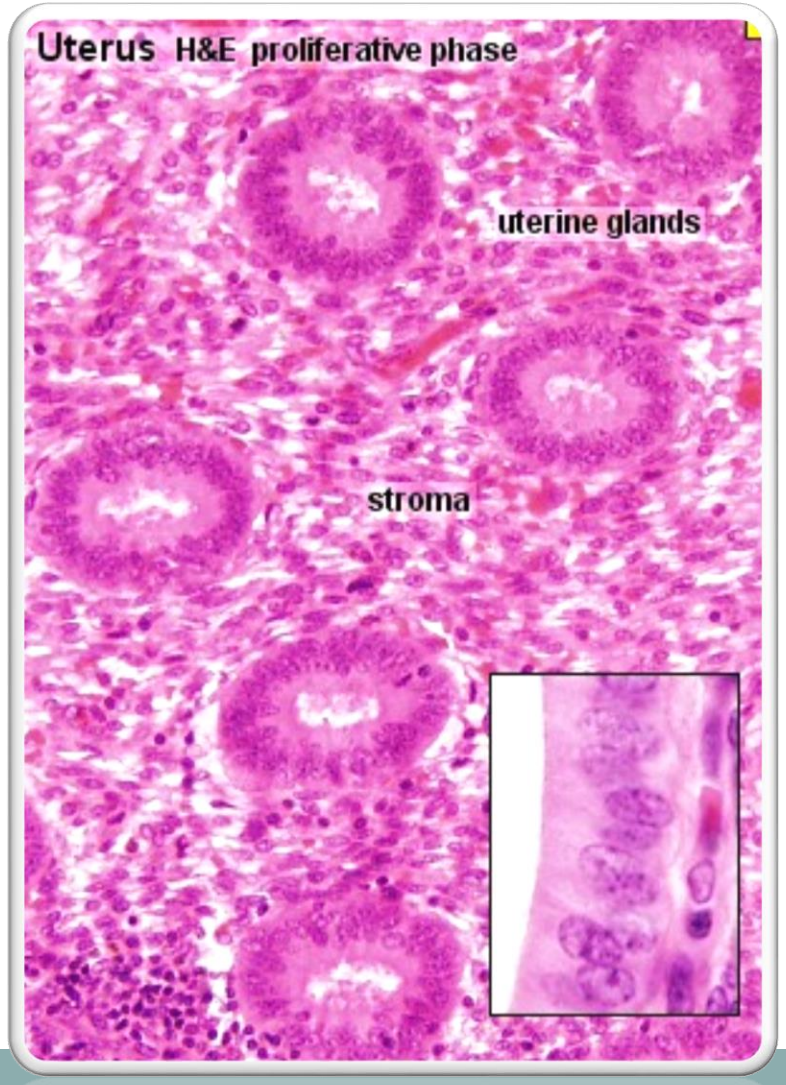
INFLAMMATORY DISEASES OF UTERUS

- Inflammation of endometrium- Endometritis
- Involvement of entire thickness of wall- Metritis
- Involvement of the serosa – Perimetritis
- Involvement of suspensory ligament- Parametritis

NORMAL HISTOLOGY OF UTERUS





ENDOMETRITIS

- Endometrium /uterine mucosa is mainly involved
- All uterine infection begin as endometritis & later progresses to involve the myometrium, becoming metritis

1.acute endometritis

mild & severe

2.Subacute endometritis

3.chronic endometritis

Mild form of acute endometritis

Jubb , Kennedy, Palmers

Post coitus in mares

GROSSLY: Not detected

- Only a slight opacity of the normal crystal clear estrual mucus may be seen

HISTOLOGICALLY

- Diffuse but light infiltration of inflammatory cells with slight desquamation of the superficial epithelium &no significant vascular changes
- Involvement of gland minimum
- Presence of neutrophil in stroma
- **Best indication of mild endometritis in all species-** accumulation of plasma cell &foci of lymphocyte in the stroma
- After resolution-only a few cystic glands with periglandular fibrosis

- Contagious equine metritis is a venereal disease of mares caused by *Taylorella equigenitalis*
- The temporary infertility that is the clinical hallmark of the disease
- Mild to moderate inflammation of the endometrium and adjacent structures

Severe form of Endometritis

- Common puerperium in cattle

GROSS

- Organ is enlarged, flabby &collapsed rather than firm &contracted
- Lumen contain chocolate coloured lochia –slightly tenacious &often with foul smell
- Endometrium is congested &swollen &intercotyledonary areas are tattered with shreds of mucosa

MICROSCOPIC CHANGES

- Small hemorrhages ,prominent leukocytic infiltration at the surface-all mucosal elements including glands

Chronic endometritis

- Characterized by the presence of plasma cells, lymphocytes, eosinophils, and even lymphoid follicles may be seen
- Severe extensive fibrosis around blood vessels & endometrial gland

Suppurative endometritis

- Sporadic,BHV-4
- Focal necrosis, ulceration, intranuclear inclusion bodies in endometrial epithelium &endothelial cells

Suppurative endometritis

-cystic endometrial hyperplasia and neutrophils in the lumen and within dilated glands, and lymphocytes and plasma cells in the stroma.

METRITIS

- Inflammation of all layers of uterine wall
- More severe &advanced form of endometritis

GROSS CHANGES

- Wall of uterus is thickened with suffused blood &oedema fluid& is very friable
- Serosa is dull,finely granular & has petichial haemorrages &fine adhering strands of fibrin
- Sub serosal vessels may be darkly congested
- Secretion- scant or abundant,is fetid & is dirty yellow to red black

- Microscopic changes-purulent inflammation

  sub serosal tissue, muscle layers, endometrium are oedematous &infiltration with leukocytes

- Leukocyte mass on the mucosal surface &are associated with extensive haemorrages, necrosis, sloughing

- Invasion of blood vessels

- Metritis can be distinguished from endometritis; in the former, all layers of the uterine wall show evidence of inflammation such as edema, infiltration by leukocytes, and myometrial degeneration

- In both conditions, the mucosa is congested, and there is a prominent leukocyte infiltration

PYOMETRA

- Sequele to endometritis & metritis
- Acute/chronic inflammation of uterus with accumulation of pus in lumen
- Colour &consistency of the exudates vary with the infecting bacteria

Viscid &brown-*E.coli*

Creamy yellow-streptococcal

GROSS

- Uterus greatly distended but not uniformily
- Greyish foci, ulcerated & haemorrhagic areas in uterine mucosa ,along with dry ,white, thickened ,finely cystic areas

- HP-dry white areas have changes of hyperplasia &squamous metaplasia of surface epithelium commonly occuring cystic endometrial hyperplasia

Remarkable endometrial hyperplasia and progestational proliferation

Parametritis & perimetritis

- Adhesion occurs
- Extend of adhesion may vary from a few fibrous bands to dense CT that obscures the contour of the organ & fixes them to adjacent structures
- Abcesses may form in the adhesion sites

ENDOMETRITIS-

- Specific endometritis
- Non specific endometritis

Non specific endometritis

GROSSLY

- Endometrium &uterine cavity will contain varying amount of purulent exudate
- Exudate varies from gray-yellow to red brown depending on the organism involved &amount of tissue damage
- Postpartum uteri often contain fragments of necrotic fetal &maternal placantal tissue

MICROSCOPICALLY

- Presence of many neutrophils in the superficial portions of endometrium
- Large number of lymphocyte &plasma cell are present in endometrial stroma-aggregates around blood vessels & glands
- With time neutrophil gradually decrease in number while MNC persist until infection resolved
- Varying amount of necrosis & fibrosis of endometrium
- Sequele – Permanent scarring &dilatation of glands

Specific endometritis

1. **Bovine venereal campylobacteriosis**

   -subacute endometritis

2. **Brucellosis**

   - Transient purulent endometritis

   -Cause granulomas in the endometrium

HP- Central areas of caseous necrosis surrounded by a zone of histiocytes ,epitheloid cells,other MNC

Scattered neutrophils also

3. **Tuberculosis** -there are two anatomical forms of the lesion

Miliary tuberculosis & Diffuse caseating tuberculosis

- *Miliary tuberculosis-* the uterus may appear normal externally
- No exudate in the lumen in early stages
- Later-granulomas enlarge and ulcerate, the uterus will contain yellow purulent exudate.

  The granulomas are visible as few or many nodules in the mucosa, usually the more superficial portions

MICROSCOPIC

- Typical tuberculoid structure
- common site is near the bifurcation of the uterus or in the caruncles of the pregnant uterus.

- Caseous tuberculosis -thickening and rigidity of the horns with serofibrinous or purulent fluid in the lumen

- The endometrium is thickened, dry, and extensively caseous

MICROSCOPIC CHANGES

- Intense leukocytic infiltration and marked exudation
- The caseated area is usually demarcated by a zone of epithelioid cells from a margin of connective tissue

4.bovine venereal trichomoniasis

Purulent endometritis &salpingitis

5.Mycotic endometritis-aspergillus &mucor

Granulomatous &fungal hyphae can be seen

6.Contagious equine metritis

HP- severe purulent ,necrotizing endometritis with extensive desquamation of necrotic endometrial tissue into uterine lumen

Conclusion

- Inflammation of uterus
  - Endometritis- acute,subacute,chronic
  - Metritis
  - Perimetritis
  - Parametritis
  - Pyometra

Endometritis initial stage of all uterine infections & later it progress into metritis & pyometra

- Endometritis - Clinical & subclinical
- Endometritis - nonspecific & specific

THANK YOU