

# Canine pyometra

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# WHAT IS PYOMETRA?

It is a hormonally mediated diestrual disorder characterised by *cystic endometrial hyperplasia* + *secondary bacterial infection*.



*Cystic endometrial hyperplasia*

# TYPES



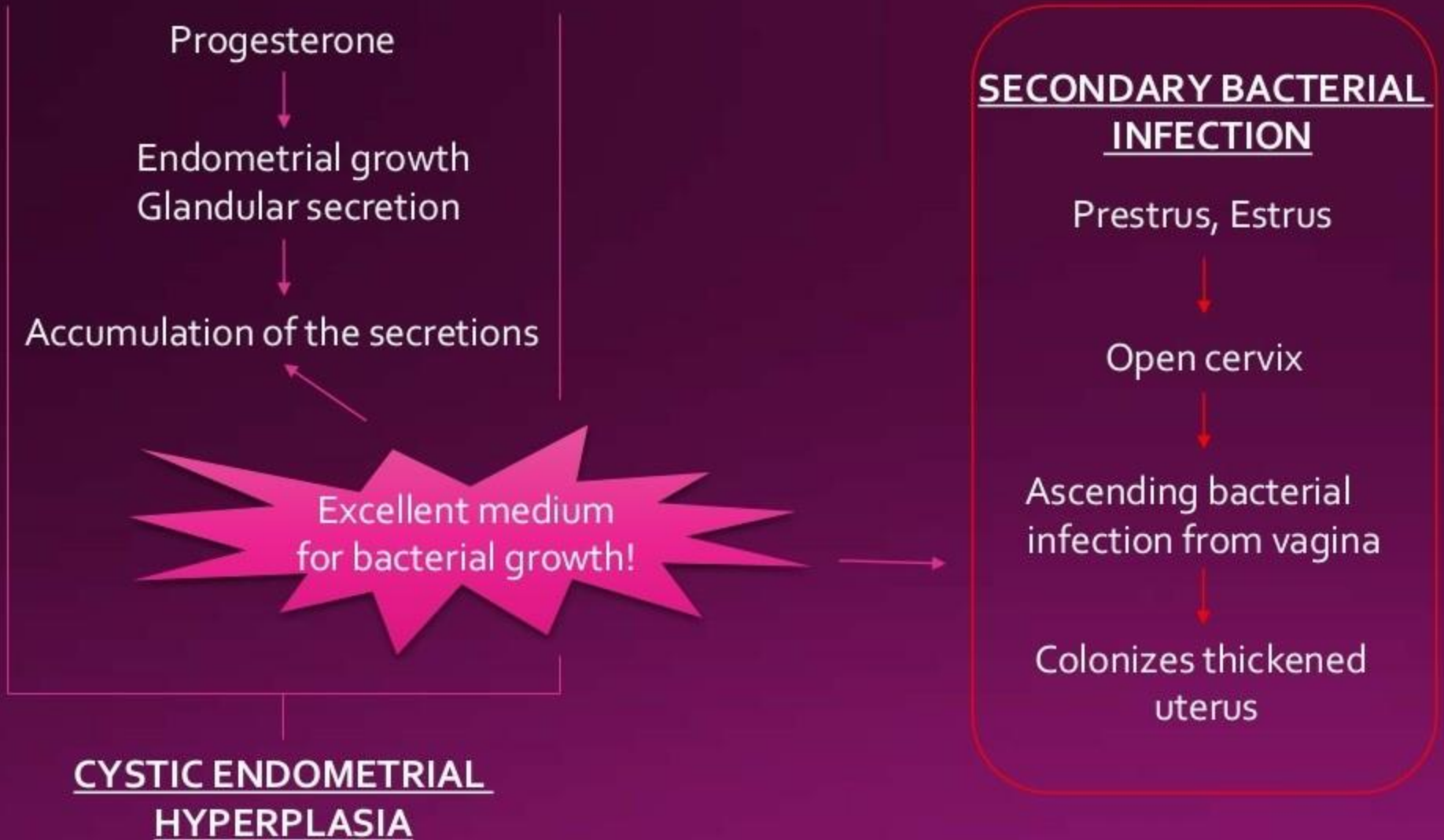
# PREDISPOSING FACTORS

- **Age:** More common in older bitches
- **Parity:** Modest relationship between nulliparity and pyometra
- **Breeds:**
  - More common- Rottweilers, Saint Bernards, Chow Chows, Golden Retrievers, Irish Terriers, Miniature Schnauzers, Cavalier King Charles Spaniels, Rough Collies, etc.
  - Less common- Drovers, German Shepherds, Daschunds, etc.

# PREDISPOSING FACTORS

- **Hormone therapy:**
  - Estrogen: Mismating
  - Progesterone: To delay estrus
- **Post insemination/ copulation infections**

# HOW DOES IT HAPPEN?



# HOW DOES IT HAPPEN?

- **Diestrus:**

- Cervix- Closed
- Myometrial contractions- None
- Progesterone primed uterus inhibits leukocyte response  
Therefore bacteria proliferate

- **Estrogen:**

- Stimulates progesterone effects
- Proliferates endometrial glands

- Increased expression of estrogen receptors in endometrium

# HOW DOES IT HAPPEN?

- Most common bacteria: *E. coli*, *Staphylococcus*, *Streptococcus*, *Pseudomonas*, *Proteus*, etc.
- Bacteria may produce biofilms
- **Secondary complications:**
  - Renal damage ← Endotoxins, Immune complexes
  - Immune suppression



# STAGES OF DISEASE

- ▶ Dow described four stages of CEH pyometra
- ▶ Type 1:-
- ▶ Type I is uncomplicated CEH.
- ▶ the endometrium has a cobblestone appearance, with thickening and many cystic irregular elevations, 4 to 10 mm in diameter, covering the endometrial surface

➤ Histologically, there is an absolute increase in the number of glandular elements throughout the endometrium, with irregular size and configuration of the gland

➤ Type 2:-

➤ Type II is CEH plus diffuse infiltration of plasma cells.

➤ No tissue destruction is visible histologically

### ➤ Type 3:-

- Type III is CEH with overlying acute endometritis.
- 
- Areas of endometrial ulceration and hemorrhage may be visible grossly, and intrauterine discharge varying in color from red-brown to yellow-green may be present.
- The acute inflammatory reaction is characterized by congestion, edema, and superficial and deep infiltration of neutrophils into the endometrium

## ➤ Type 4:-

- Type IV is CEH with chronic endometritis.
- If the cervix is open, allowing drainage of intrauterine fluid, the uterine horns will be narrow in diameter, the walls grossly thickened, and minimal discharge present.
- The endometrium is atrophied, and infiltration of plasma cells and lymphocytes is present.
- The myometrium is hypertrophied and fibrotic.

# CLINICAL SIGNS

Observed during diestrus or after administration of exogenous progestins

- Lethargy
- Anorexia
- Dehydration
- Vomiting
- Polyuria
- Polydipsia



Polydipsia

# CLINICAL SIGNS

## Open pyometra:

- Less systemically ill
- **Vulval discharge:** Consistency- Watery to creamy  
Color- Light chocolate brown, sometimes yellow, often blood tinged  
Odor- Malodor
- Vulva- Generally enlarged
- Discoloration of perineum and perivulvar tissue

# CLINICAL SIGNS

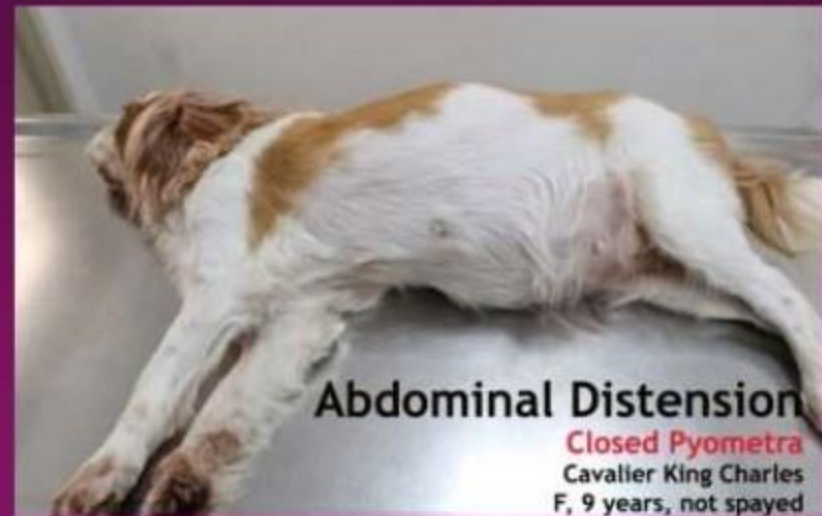


*Watery, light chocolate brown  
vulval discharge*

# CLINICAL SIGNS

## Closed pyometra:

- Very ill at presentation
- Abdominal distension
- Sometimes, intermittent opening of cervix with pus discharge
- Death ← Toxemia, Rupture of uterus





# CLINICAL SIGNS

CLINICAL SIGNS	OPEN PYOMETRA	CLOSED PYOMETRA
Vulvar discharge	++++	+
Abdominal distension	++	+++
Lethargy	++	+++
Polydipsia and Polyuria	+++	+++
Vomiting	++	+++

+ → Rarely seen

++ → May be seen

+++ → Commonly seen

++++ → Always seen

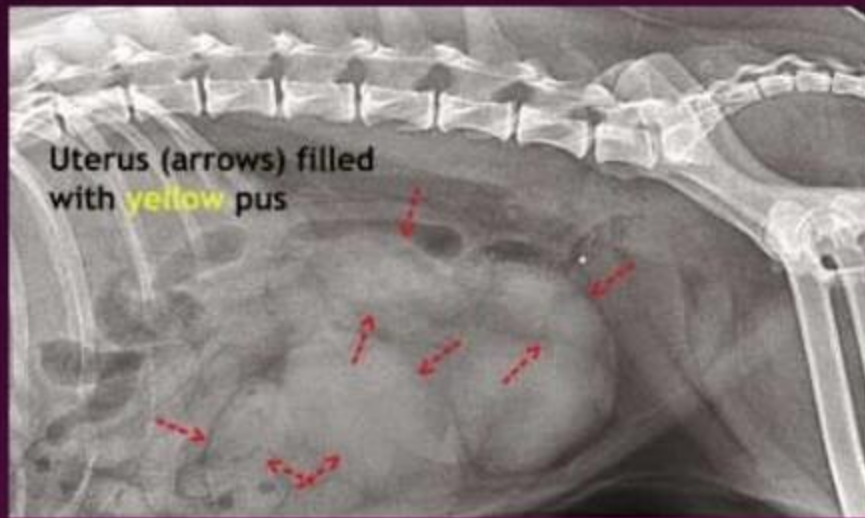
# CLINICAL PATHOLOGY

- Leukogram: Variable
  - Leukocytosis (Neutrophilia with left shift)
  - Leukopenia in sepsis
- Mild normocytic, normochromic, non regenerative anemia (PCV: 30- 35%)
- Hyperproteinemia
- Proteinuria

# DIAGNOSIS

- History
- Clinical signs
- Clinical pathology
- Physical examination
- Radiography
- **Ultrasonography:**
  - Uterine wall- Relatively hypoechoic, increased thickness
  - Uterine contents- Homogenous, anechoic
- Endoscopy

# DIAGNOSIS



*Radiography*



*Ultrasonography*

# TREATMENT

## 1. Ovariohysterectomy:

- **Indications:** Closed pyometra, no desire to breed
- Fluid and electrolyte imbalances must be corrected pre surgery
- Antibiotics for 7- 10 days post surgery
- **Recurrence is avoided**



# TREATMENT

## Medical treatment:

**Indications:** Not life threatening, required for breeding

## 2. PGF<sub>2α</sub>

- Luteolysis, myometrial contraction, cervical relaxation
- Dinoprost tromethamine

DAY	MORNING	EVENING
1	0.1 mg/ kg S/C	0.1 mg/ kg S/C
2	0.2 mg/ kg S/C	0.2 mg/ kg S/C
3- 7	0.25 mg/ kg S/C	0.25 mg/ kg S/C

# TREATMENT

Cloprostenol @ 1- 5  $\mu\text{g}/\text{kg}$  I/M, S/C OD for 21 days

- **Adverse effects:** Restlessness, anxiety, panting, hypersalivation, pacing, tachycardia, vomiting

**Remedy:** Fluids

- **Contraindications:** Aged animals, severely ill animals, not intended for breeding

Use with caution in closed pyometra

# TREATMENT

## 3. Progesterone receptor antagonist:

- Mifepristone @ 2.5 mg/ kg BID PO  
@ 5 mg/ kg OD PO  
Aglepristone @ 10 mg/ kg S/C, 2 doses 24 hours apart
- Both open and closed pyometra



# TREATMENT

## 4. Dopamine agonists or Prolactin inhibitors:

- Prolactin- Important luteotropic hormone
- Bromocriptine @ 20  $\mu\text{g}/\text{kg}$   
Cabergoline @ 5  $\mu\text{g}/\text{kg}$  PO, 5 doses at 24 hour intervals  
Methylergometrine
- In combination with Prostaglandin

# TREATMENT

## Antimicrobial therapy:

- ABST
- Amoxicillin @ 20- 30 mg/ kg I/M, I/V, S/C, PO at 6- 12 hour intervals
  - Amoxicillin+ Clavulanic acid @ 10- 30 mg/ kg PO at 6- 12 hour intervals
  - Cephalosporins
  - Potentiated Sulphonamides

# TREATMENT

GENERIC NAME	TRADE NAME(S)	PRESENTATION	AVAILABILITY
Dinoprost tromethamine	Lutalyse	5 mg/ ml	10 ml
Cloprostenol	Pragma, Clostenol, Repregna	250 µg/ ml	2 ml
Mifepristone	MT Pill, Unwanted, Mefipil	200 mg/ tab	200 mg tab
Aglepristone	Alizin	30 mg/ ml	10 ml
Bromocriptine	Encript Proctinal	2.5 mg/ tab 1.25 mg/ tab 2.5 mg/ tab	2.5 mg tab 1.25 mg tab 2.5 mg tab
Cabergoline	Cabgolin	0.25 mg/ tab 0.5 mg/ tab	0.25 mg tab 0.5 mg tab
Methylergonovine	Methergine	0.125 mg/ tab 0.2 mg/ tab	0.125 mg tab 0.2 mg tab

# PROGNOSIS

- Open: Good  
Closed: Guarded- Poor
- Guarded- Poor if discharge and uterine enlargement persists after 2 weeks of treatment

# REFERENCES

- “Canine Pyometra” by Rubina Kumari Baithalu et al.
- “Pyometra in Small Animals” by Mushtaq A. Memon
- “The Dog Breeder’s Guide to Successful Breeding and Health Management” by Margaret V. Root Kustritz
- “Boothe’s Small Animal Formulary” by Dawn Merton Boothe

THANK YOU!

