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Monograph

Campylobacteriosis

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Introduction

Highly contagious worldwide distributed disease associated with infection of the genital tract and gastrointestinal tract of cattle, buffalo, sheep, goats, poultry, pets, zoo animals, hamster, wild birds and humans.

Etiology- Campylobacter (earlier called as vibrio)

Gram-ve, microaerobic, spiral or corkscrew shape

Remain as commensal in intestine & reproductive tract. Several species have zoonotic implications

Organism does not survive in environment.

Spps- C.jejuni, C.coli, C. featus- enteritis & abortion.

C.hypointestnalis subsp hypointestinalis- Porcine enteritis

C.foetus subsp foetus, C.foetus subsp veneralis- abortion and infertility in cattle & sheep.

Campylobacteriosis

Enteric (C. Jejuni, C. Coil)

Bovine Genital Campylobacteriosis (C. foetus)

Enteric Campylobacteriosis

- C. jejuni & C. Coli.
- Commensal in the intestine of farm animals, poultry zoo & wild birds.
- Transmission- food-borne bacterial infection or water borne
    - Feco-oral spread in common.

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- Zoonotic transmission from animals to people through the meat. (Especially chicken)
- Bacteria sheds through faces, milk, and vaginal discharges, in aborted featus.

➢ Bacteria Colonize, attaches and produce toxin.

➢ C. jejuni do not produce disease in adult animals except sporadic abortion.

➢ Infection begins with ingestion of C.jejuni in contaminated food and water. Gastric acid act as a barrier and bacteria reaches the small and large intestine to multiply and invade in epithelial cell & lamina propria.

Clinical signs- Abdominal pain, fever, diarrhoea.

Dogs- diarrhoea last for 5-15 days in 6 months below age dogs, abortion in late pregnancy.

Cattle - diarrhoea and abortion.

Sheep and Goat-C. jejuni is a recognized cause of abortion in late pregnancy and stillbirths in sheep and goats, which must be differentiated from that caused by *C. fetus* subsp *fetus* by identification of the pathogen in the stomach contents of aborted fetus. In most cases, *C. jejuni* lesions are not specific, consisting of stunting and fusion of villi, dilation of crypts and crypt abscesses, mild cellular infiltration of the mucosa. Occasionally ulceration and haemorrhages can be seen. Most severe lesions are found in the proximal small intestine, but can also affect the entire small intestine and colon. Comma-shaped organisms can be seen on the surface of the epithelium and within the lamina propria using silver staining. Other lesions include necrotizing and suppurative placentitis and fetal bronchopneumonia.

Pigs- colitis mainly due to C.coli with diarrhoea last for 1-5 days.

Birds- mainly gastrointestinal form. watery droppings. Soiling vent & feathers.

Humans- 14.8% human population is affected clinically with traveler diarrhoea.

Genital Campylobacteriosis

➢ C.foetus subsp fetus, C.foetus subsp veneralis

➢ Commensal in bovine genital tract.

➢ Sporadic abortion in bovine, enzootic abortion in sheep.

➢ Organisms remain confined to the preputial cavity, glans penis, epithelial cells in crypts. In bulls below 3-4 years old, crypts have not developed so transient infections are seen and spontaneous clearance at sexual contact is observed but above 3–4-year-old bulls, deeper crypts chronic infections is seen. Cows are in a carrier state.

➢ C. foetus transmitted venerally and also by contaminated bedding instruments and A.I.

Pathogenesis-

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1. Healthy bulls get infected by diseased cows after coitus or healthy Cows get infected with infected bull.
2. In cows, infection is a limited cervico-vaginal area during estrus as there are abundant neutrophils in the uterus but at a later stage of estrus(Until progesterone phase), bacteria localize in the uterus and colonize in the endometrium
3. Ig A is mainly in cervicovaginal mucus and Ig G in the uterus to immobilize the bacteria but antigenic variation and reduced immune response may lead to persistent infection and carrier state.
4. During the pre-implantation period, the growth of campylobacter reduces the oxygen supply and nutrients to the embryo ultimately death and abortion.
5. Sheep have been symptomless carriers and resistant to infection, so quite low abortions are seen.

Clinical finding- early embryonic abortion as placenta expelled out with foetus while retained placenta in late abortions, endometritis and salpingitis, prolonged luteal phase and irregular estrus cycles. In ewes'and goat's abortions usually takes place at 6 weeks of age.

Diagnosis

1. Sample Collection-
   - preputial washings and vaginal or cervical mucus in 20 to 30ml PBS and 1% formalin, sorted fetus stomach content.
   - Faeces, rectal smacks and local content (freshly collected).
2. Microscopic & cultural examination –
   - Cultured in the microaerobic environment at 37° C and appear as curved / spiral bacillus.
   - Dark or helical or comma-shaped by dark field or phase contrast microscopy.
3. C.jejuni can be diagnostic on microscopic examination & cultural Characteristics.
   - Molecular detection of the organism can be done by real-time PCR.
4. C. Featus-
   - cervical mucus agglutination test (CMAT)
   - Vaginal mucus agglutination test (VMAT)
   - ELISA is also a reliable test for diagnosing by detecting antibodies.

Treatment: -

- Clindamycin, tetracyclines, penicillin, and nalidixic acid are effective drugs. Antibiotic-resistant is a common and persistent shedding is common.

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- Streptomycin is choice of drug at 25mg/kg b.wt.

Prevention & Control: -

- Biosecurity and screening of to identify the disease and at the younger age is better.
- Acquire initial stock from better-managed farms.
- There should be compulsory vaccination of values and adults (whole cell or bacterial extract) Both male & female req-vaccine
- Utilization of artificial insemination with non-contaminated semen, testing & culling of infected animals.
- Immunization with Ig G, M & A Immunoglobulins.
- Hygienic measures should be followed with sanitation of water supply, disinfection of sheds, disinfection of A.I equipment with 1% sodium hypochlorite, 70% ethanol etc.

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