

Uterine Infections – Diagnostic Procedures and Therapeutic Protocols

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<https://doi.org/10.5281/zenodo.8078770>

Uterine dysfunction can have a major impact on the profitability of a dairy operation. Bacterial endometritis is considered to be the most common cause of repeat breeding in bovines. The most commonly involved organisms are Escherichia coli, Staphylococcus, Streptococcus, Corynebacterium, Bacillus, Pseudomonas, Micrococcus and Klebsiella.

Diagnosis

Clinical endometritis is usually diagnosed by evaluation of uterine discharge detected in the vagina with the aid of

- **Speculum** - should be introduced into the vagina up to the level of the external os of the cervix, and inspection of the discharge is performed with the aid of a flash light
- **Metricheck tool** - device should be introduced into the vagina up to the level of the external os of the cervix and the discharge should be scooped for evaluation after exteriorization of the device. The mucus score by Vaginoscopy or Metrichek device is as follows:

Score 0: clear or translucent mucus.

Score 1: mucus containing flakes of white or off-white pus.

Score 2: discharge containing $\leq 50\%$ white or off-white mucopurulent material.

Score 3: discharge containing $\geq 50\%$ purulent material, usually white or yellow, but occasionally sanguineous.



Metricheck for identifying cows with metritis

- Detection of fluid in the uterus using ultrasonography.
- Using an electronic nose (DiagNose) - Electronic sensor devices detect vaginal discharge odour substances indicating estrus or pathological infection in cattle

For Subclinical endometritis - Uterine cytology samples can be collected using the cytobrush (At the uterine body, the cytobrush is exposed and the body wall is pressed slightly against the cytobrush while the cytobrush is rolled two or three times) or the low-volume uterine lavage (foley's catheter can be used to perform a low volume lavage) technique



Cytology tool with cytobrush attached



White side test is simple and easy test for ruling out the subclinical genital endometritis.

Procedure

One ml of the cervical mucus was mixed with one ml of 5 per cent NaOH solution in a test tube and heated up to the boiling point and subsequently cooled in running tap water. The appearance of yellow colour was taken as positive indication of infection. Depending on the intensity of colour development the degree of endometritis was classified as 1 – No colour (absence of infection), 2 – mild yellow colour change (mild infection), 3 – intense yellow colour (severe infection).

Treatment

Immunomodulators used in the treatment of endometritis are as follows:

- a. E. coli lipopolysaccharide - 100µg in 60ml PBS
- b. Oyster glycogen -500mg in 60ml PBS
- c. Bacteria-free filtrate
- d. Serum, plasma, or hyperimmune serum
- e. Levamisole - administration of a single dose of levamisole @ 2.5 mg/ kg.bw results in immunomodulatory effect for about 48 h
- f. Leukotriene B4
- g. Granulocyte-macrophage colony-stimulating factor
- h. Human recombinant interleukin-8

Ozone therapy

Intra-uterine ozone treatment alone (for 10 sec) or combined with parenteral antibiotics

Hormonal therapy – prostaglandin therapy – 2 doses of PGF₂α I/M 8 hrs apart on day 8 of cow suffering with acute puerperal metritis increased first service conception rates by 17% in primiparous cows.

Miscellaneous

Intrauterine infusion of methanol fraction of neem oil and neem seed powder in treatment of endometritis in cows - higher pregnancy rate (71.42%) was obtained in neem oil fraction-treated cows than control cows (25%) with significant decrease in bacterial load in animal treated with neem-oil (96.02%) and seed-powder fraction (98.70%) compared to control (24.97%).

