

## VIRAL INFECTIONS OF GENITAL TRACT

### الإصابات الفيروسية للجهاز التناسلي

#### 1. Infectious bovine rhinotracheitis

A herpes virus causes infectious bovine rhinotracheitis (IBR). IBR can affect the respiratory, reproductive, nervous and digestive systems of cattle. The disease can be transmitted sexually or by droplet inhalation; in its venereal form it has been associated with infertility.

#### Signs:

1. Cows and heifers served by an infected bull develop a pustular vulvo-vaginitis 2 to 3 days later.
2. Superficial ulcers on the mucosa of the vestibule and may discharge yellowish pus.
2. Infection rarely extends directly to the cervix or uterus, and therefore pregnancy is rarely terminated.
3. The virus may also invade the uterus systemically in cows suffering the respiratory form of the disease.
4. Abortion occurs after 4 to 7 months.
5. The dead fetus may be retained for several days and appear mummified when finally expelled.
6. Hemorrhagic fluid and edema may be seen in the fetal pleural and peritoneal cavities, with focal necrosis, particularly of the liver.

#### Diagnosis:

1. Isolating the virus from the fetal brain, liver, spleen or lung tissues, placentomes or swabs from the nose, eyes, penis or prepuce.
2. The virus grows best in bovine fetal kidney cell cultures.

3. It can be identified by serum neutralization or immunofluorescence inhibition tests.

**Control:**

Vaccination against IBR to provided good protection against abortion when given to cows that were not pregnant, but caused abortion in some pregnant cows. The pregnant cows could be safely vaccinated intra-nasally.

**2. Bovine viral diarrrhea**

Bovine viral diarrrhea/mucosal disease (BVD/MD) is widespread. It is caused by a **Toga-virus**.

**Signs:**

1. Infection may be acute, mild or chronic.
2. When the virus infects a pregnant cow it may also infect the fetus and kill it.
3. Calves born alive may be stunted, with cerebellar hypoplasia, brain cavitation and mucosal ulceration.

**Diagnosis:**

1. Signs aid diagnosis.
2. Confirmation is by the demonstration of antibodies in foetal blood prior to ingestion of colostrum.
3. A double sample with dam's blood is very helpful.

**3. Infectious (contagious) bovine epididymitis and vaginitis complex.**

Infectious bovine epididymitis and vaginitis complex (Epivag) is a venereal disease.

### Signs:

1. Muco-purulent discharges from the vagina.
2. Permanent lesions on the Fallopian tubes.
3. In the bull, it causes the epididymis to swell, sometimes to the size of a golf ball.
4. The disease can be controlled by slaughtering infected bulls and by using artificial insemination.

### **عدوى المايكوبلازما Mycoplasma**

Mycoplasma are infective agents distinct from both bacteria and viruses. Several species of Mycoplasma cause disease in cattle. They have been associated with infertility, but their exact etiological role is difficult to ascertain because they are present in the tracts of healthy animals.

1. *Mycoplasma bovis*
2. *M. argini*.
3. *M. alkalescens*.
4. *M. laidawii*.
5. *M. bovis*.
6. *M. bovirhinis*.
7. *M. verecurdum*.
8. *M. conjunctivae*.

Mycoplasmas can be transmitted by discharges from the respiratory and reproductive tracts, and by milk, of infected animals. Infected cattle develop antibodies, but these do not give complete protection.

Symptoms associated with mycoplasmosis can also be observed with other conditions. Diagnosis can only be confirmed by isolating the organisms from nasal or reproductive-tract mucus and discharges, milk, arthral fluids, fetal

tissues or the placenta. The best way to control mycoplasmosis is to cull infected animals.

### التهاب الرحم: Metritis

Metritis is often also associated with uterine atony or inertia. Acute metritis causes fever and depression within a week of infection, and is commonly followed by chronic metritis, with persistent purulent vaginal discharge. Specific venereal infections, such as trichomoniasis, Campylobacteriosis and brucellosis, may also lead to metritis.

### تقيح الرحم: Pyometra

Pyometra is the accumulation of pus in the uterus. It is a common cause of anestrus and cows with pyometra should be treated promptly. Postpartum metritis, endometritis and pyometra may be common where cows and heifers are confined at delivery time in a building or area in which others have recently calved.

The uterus can resist or eliminate bacterial infection. However, this ability is related to ovarian activity The uterus is highly resistant to infection during the estrogenic phase but very susceptible during the period of progesterone dominance, because:

1. PH in the uterus is low, allowing greater bacterial growth.
2. Epithelium is less permeable to bacteria and therefore the leucocytic system is stimulated at a later stage.
3. Appearance of leucocytes in the lumen is delayed.
4. The activity of leucocytes is decreased.
5. Uterine secretions have no detoxicating effect

Cows with chronic metritis are anoestrous and may have a retained (persistent) corpus luteum. Where a corpus luteum is present, initial treatment should aim at removing it.

This is best achieved by an intramuscular injection of prostaglandin. If there is no corpus luteum, endometritis can be treated by infusing antibiotic or sulphonamides into the uterus. Application should be repeated every 2 days for a week. Alternatively, about 100 ml of 2% iodine can be infused into the uterus. The iodine solution is an irritant and stimulates new endometrial growth. Where the oviduct, deeper layers of the uterus or the cervix or vagina is infected, antibiotic should be given intra-muscularly.

Prostaglandin F<sub>2</sub> a (PGF<sub>2</sub> a) reduces inhibition by progesterone of the uterine defence mechanism. Oestrogen secreted during the subsequent development of a follicle promotes uterine defence. PGF<sub>2</sub> a may also stimulate myometrial contractions, helping to empty the uterus of lochia and pus. It may encourage phagocytosis. Jackson (1977) found that a single injection of PGF<sub>2</sub> a cured pyometra in 90% of cases. The remaining 10% of cows were cured by a second injection. Prostaglandin treatment may thus be sufficient to clear pyometra and additional antibiotic therapy may be of little advantage (Fazeli et al, 1980).

Several other postpartum conditions can reduce fertility. Cervicitis and vaginitis often follow a delayed or complicated delivery. Metritis may cause abscesses in the uterus; if it spreads to the Fallopian tubes it may lead to salpingitis. Scars in the uterus and adhesions between parts of the reproductive tract can result in infertility or sterility. Routine examination of cows 1 or 2 months after delivery can diagnose such conditions early.

Irrespective of the condition, treatment should also aim at restoring the animal's normal hormonal status. Thus a persistent corpus luteum must be

enucleated or lysed. Inactive ovaries should be stimulated using small doses of oestradiol benzoate (2-5 mg i.m.) or diethyl stilboesterol (20 mg i.m. or orally). Cows should be given a period of sexual rest of 2-3 cycles after treatment.

### **Retained fetal membranes: احتباس الاغشية الجنينية**

Two to 30% of cows retain their fetal membranes for 12 to 24 hours after a normal delivery. The afterbirth, or fetal membranes, is retained if the cotyledonary villi fail to detach from the caruncular crypts. Membranes retained for more than 2 or 3 days decompose in the uterus, leading to metritis.

The incidence of retained afterbirth is often high in Brucella-infected herds, following a difficult delivery and in cows suffering certain nutritional and mineral (especially selenium) deficiencies. Grunert (1984) categorised the basic causes of afterbirth retention as: immature placentomes, oedema of the chorionic villi, necrosis between chorionic villi and the walls of the crypts, advanced involution of the villi, placentome hyperhaemia, placentitis and cotyledonitis, and uterine inertia.

Cows with retained afterbirth have poor appetite and reduced milk and meat yields. Their fertility is reduced, especially if metritis develops.

Treatment of the cow with retained afterbirth should be aimed at expelling the afterbirth and preventing infection of the uterus. In treating a cow with retained afterbirth, it should be remembered that removing the afterbirth by hand may be harmful to the cow; it may cause haemorrhage, haematomas and vascular thrombi in the uteri, reducing subsequent fertility.

The operator may also fail to remove all the afterbirth. There is also the risk of contracting brucellosis from handling retained afterbirths. Banerjee (1963) found, for example, that conception to first service among European Bos taurus cattle in which the retained afterbirth was manually removed was only 39%.

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compared with 50% among cows in which no treatment or removal of the afterbirth was undertaken. Manual removal with an intra-uterine infusion of oxytetracycline also resulted in 39% conception to first service.

In contrast, intra-uterine treatment with oxytetracycline alone without removal of the afterbirth resulted in the highest conception rate (70%). Manual removal delayed establishment of the first functional corpus luteum by 20 days in Holstein cows induced into parturition.

Proper animal husbandry can reduce the incidence of afterbirth retention. Animals should be sexually rested for at least 2 months after calving, fed a balanced ration, adequately exercised where they are continuously raised indoors and immunized against prevalent infectious diseases that cause abortion. Animals should not be unduly stressed and proper sanitation and management must be exercised at delivery; selenium should be added to feed where it is deficient.