Just Veterinary Volume 1 Issue 1, November (2023), Page: 32-34

Mycotic Abortion: A threat to the Dairy Sector

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Abstract

Abortion in dairy cattle is an important matter of concern as this results in losses to the dairy farmers. Abortions due to mycotic organisms are sporadic in occurrence but can exceed up to 20% in pregnant herd. It is particularly challenging due to poor detection thus limiting the treatment options. The most common modes of infection are through GIT and respiratory tract following infections with systemically invasive fungal organism like *Aspergillus* spp. The following articles briefly highlights the impact of fungal abortion and puts and insight into the management procedures

Keywords: Fungus, Abortion, Sporadic

Mycotic abortion is an important problem in dairy herds. Many fungal organisms comprising of yeasts and moulds are responsible for causing mycotic abortion thus it is also referred to as fungal abortion or mycotic placentitis. There are about 35 different types of fungi that can cause abortion in Bovines., among which *Aspergillus fumigatus* is most frequently reported. Most cases are reported during the winter and spring season, Since the animals are frequently housed indoors or in a confined barn during these seasons, they become exposed to mouldy hay or silage which becomes the mail route of inoculation of the fungal organisms. Although the epidemiology of mycotic abortion is not well understood, but researchers found that mouldy hay, straw, and feed are the main source of infection.

It has been reported that fungal spores are able to cross the placental barrier infecting the fetus causing abortion. Mycotic abortion in cattle is usually occurs after first 6 months of gestation. The fertility of the animal is not affected, and the animal does not even show the signs of affection prior to aborting the fetus. There are no autolytic changes seen in the fetus. But the aborted animals usually suffer from retention of placenta.

Fungal abortions are sporadic in occurrence but in some cases, it can affect as high as 10%–20% of the pregnant herd. Fungal abortions are difficult to detect beforehand and thus treatment options are limited. 20% of the cases are due to opportunistic filamentous fungi and yeasts.

Etiology

Cattle, sheep, and mare are the most susceptible hosts. Common aetiological agents include *Mucor rhizopodiformis, Absidia corymbifera, Absidia ramosa, Aspergillus flavus, A. fumigates,A. nidulans, A. terreus, A .niger, A. versicolnr ,Rhizopus pusillus, Rhizomucor pusillus ,Rhizopus arrhizus, Rhizopus boyinus, Kontospora lanuginose, Mortierella polycephala, Polystictus versicolor, Mortierella zychae, Mortirella wolfi , Candida tropiculis, Nicardia asterodies*. Apart from housing, pregnancy also predisposes the animal to mycotic abortion. This occurs mainly due to metabolic derangements. Housing in confined spaces exposes the animals to fungal spores that are widely prevalent in the air of the cowsheds. The incidence is high in late summer or early autumn due to the presence of huge number of fungal spores in pastures during this season.

Pathogenesis

The fungal organisms gain entry through two common routes viz. respiratory tract and gastrointestinal tract. After entry through respiratory tract, the organisms enter the systemic circulation and reach the uterus causing abortion. The organisms may enter the Gastrointestinal tract from spoiled feed and enter the circulation through injury in the GI tract causing abortion.

Symptoms and Lesions

Before or after the dead fetus is expelled, the dam exhibits no symptoms. On the basis of the pathological appearance of the placenta, particularly the cotyledons, as well as the presence of lesions on the foetal skin, mycotic abortions can be tentatively diagnosed. The cotyledons are necrotic, and the inter-cotyledonary regions of the placenta are thickened and leathery. Aborted fetuses may have raised cutaneous plaques, resembling ringworm lesions. (*A. fumigatus*). Characteristic changes can be seen in the placenta. The maternal part of the cotyledon adheres to the chorionic part in placental lesions, resulting in raised, solid, yellowish, cushion-like structures that frequently have thickened margins. On the flanks, neck, axilla, and inside of the backs of the fetus, diffused white hair can occasionally be seen as skin lesions.

Diagnosis

The diagnosis is made by looking for mycotic components in pneumonia, placentitis, or foetal dermatitis. The gold standard for identifying mycotic abortion and distinguishing it from bacterial abortion is isolation and identification. Microscopical and cultural examinations are used to confirm mycotic abortion. Hyphae could also be found by examining wet preparations of the affected cotyledons and the contents of the abomasa. The contents of the foetus' stomach can also be used to separate and identify the fungus. The morphology and pigmentation of hyphae found in tissues can also be used to identify them. At field level, fungal mastitis is often seen sporadically with appearance of placental and foetal skin lesions. Abortions usually occur late in pregnancy and therefore the placenta is typically retained.

Treatment

No clinical symptoms are observed within the dam either before or after abortion and no treatment has ever been given to the affected animals.

Control

Evidence regarding the means of control is conjectural due to the hazy epizootiology of mycotic abortion. If it is assumed that mouldy hay and straw are the most common sources of infection, it is crucial to keep a close eye on their quality so that any sample that appears to be overly dusty can be rejected. It has been demonstrated that the main component of dust is a variety of fungal spores, but more specifically, the spores of mycotic abortion. To reduce subsequent mould growth, the treatment of hay with a suitable fungicide during haymaking should be eliminated. Housing of animals in relatively confined spaces should even be avoided because some evidence indicates that air of over-crowded cowsheds is rich in spores of fungi and may cause abortion.

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