Infectious pustular vulvovaginitis in a buffalo: A case report

Abstract

The present communication reports a case of infectious pustular vulvo-vaginitis in a 5 year-old Murrah buffalo. The animal had a history of abortion, retention of foetal membranes and dark, raised nodular lesions on the surface of udder with mastitis. Physical examination revealed a rectal temperature of 104 ℃ and slightly congested mucous membranes. On examination of the vaginal mucous membranes, several white, round lesions were observed. Dark circular, raised lesions were observed on the surface of the udder as well. On haematological examination it was found that there was presence of absolute neutrophilia with a mild left shift. The impression smear from vaginal mucous membrane revealed hyperplastic changes with presence of few neutrophils. The CMT score of all quarters were 2+, with pustular discharge observed from the right hindquarter. The animal was treated with Ceftiofur (1.1 mg/kg BW), gentamicin (4.4 mg/kg BW) and metronidazole (10mg/kg BW) along with b-complex vitamins and supplements containing biotin and vitamin A. The animal recovered uneventfully.

Keywords: Buffalo, Infectious pustular vulvovaginitis, mastitis

Introduction

Infectious pustular vulvovaginitis is caused by Bovine herpesvirus 1 (BHV-1) which is also associated with other diseases in cattle such as Infectious Bovine Rhinotracheitis, Infectious Balanoposthitis, conjunctivitis, abortion, and mastitis. The respiratory form is the most common form whereas the genital form is commonly found in breeding cattle causing Infectious pustular vulvovaginitis in cows and balanoposthitis in the bull. The disease may not cause heavy mortality, but it is of great economic importance as the disease has a high morbidity rate and affects several other factors such as growth, a significant reduction in milk production as well as reduction in the quality of milk, abortions or calves born with congenital anomalies, infertility, efficiency of the immune system making the animal more prone to secondary bacterial pneumonia along with the cost of treating the disease. According to an extensive study conducted in various Indian dairies, the seroprevalence of IBR ranged from 36.5 percent to 84.5 percent, with an overall prevalence of 61.6 percent. (Kumari *et al.*, 2019)

Infectious pustular vulvovaginitis (IPVV) in the cow or Infectious Balanoposthitis (IBP) in bulls causes pustular lesions of the genital tract and may lead to abortion in a cow. Usually, IPVV is observed 1-3 days after mating. Frequent urination is the first indication of IPV, followed by minute pustules (1-2 mm) on the vulva. (Majumder., *et al.,* 2016.). The treatment involves the use of antimicrobials to prevent secondary bacterial pneumonia and infection along with non- steroidal anti-inflammatory drugs if required. Immunization is of prime importance and can be done using both the modified live vaccine or the inactivated vaccine which can be given intramuscularly or intranasally. However the intramuscular injection must be avoided in the case of pregnant animals as they tend to cause abortions. (Khristov and Karadzhov, 1977).

For the diagnosis of IPVV, it can be done based on the clinical signs and characteristics lesions which must be correlated with the history. However viral isolation is a confirmatory test to identify the etiological agent and to rule other possible infections. One of the molecular approaches used to detect BoHV1 infection in aborted fetuses, calves, cows, and sperm samples is polymerase chain reaction (PCR) (Takiuchi et al., 2005). The international accepted technique for trade to detect the seroprevalence in a large herd is the use of the serum neutralization test for detection of BHV-1 antibodies by Indirect-ELISA kits which has also been found to be a sensitive and useful method of detecting the presence of the disease, however this method has the drawback due to interference by non-antibody neutralizing factors in the sera, is time consuming and requires cell culture facilities. According to some publications, micro SNT and ELISA have a good positive correlation in detecting BoHV-1 antibodies. (Das et al., 2014).

Case presentation

A five-year-old Murrah buffalo was presented to the large animal clinic with the primary complaint of circular raised lesions on the surface of the udder for the past one week. The animal had a history of abortion along with retention of foetal membranes eight days back, before which a slight swelling of the udder was reported. History of fever (104 °F), inappetence and a decrease in milk yield were also informed. On physical examination, the animal was observed to be alert and active with a rectal temperature of 101°F and slightly congested mucous membranes. On palpation of the rumen, it was found to be doughy in consistency with motility of 2 in 3 minutes with a respiratory rate of 15 breaths/ minute. On examination of the vaginal mucous membranes, several round white raised lesions were observed (Figure 1), these were also present on the vulval lips as seen in Figure 2. The udder had multiple raised circular lesions with dark discolouration in the centre (Figure 3) and on palpation no abnormalities or fibrosis was observed.

The blood sample was collected for haematology to rule out any systemic involvement and an impression smear was taken from the vulva for cytological analysis and isolation of the virus. A standard CMT was also conducted to detect intramammary infections. The blood sample revealed a Haemoglobin of 11%, a TLC of 10,200 cells/ microlitre. A differential leukocyte count showed absolute neutrophilia (Neutrophils 72% and Lymphocytes 28%) with a mild shift to left. Although the virus could not be isolated, but the impression smear showed hyperplastic changes along with a few yeast-like organisms. The CMT of the milk revealed 2+ infection affecting all quarters with a discharge of pustular discharge from the right hindquarter. The animal was treated with Ceftiofur @ 1.1 mg/kg BW bid for a period of three days, Gentamicin @ 4.4 mg/kg BW od, both intramuscularly along with Metronidazole 10mg/kg BW bid and vitamin supplement of Hivit od 15 ml for a period of 5 days. The case was then followed up after a period of 15 days and the animal had recovered uneventfully with remission of the circular lesions on the vaginal mucous membranes and the udder.

Case discussion

The case presented was presumptively diagnosed as infectious pustular vulvovaginitis based on the characteristic pustular genital lesions found in the vulva and the circular lesions on the udder along with the history of abortion in the last trimester that occurred a week ago which were typical of the genital form of Bovine Herpes Virus (BoHV1). Dhand *et al*. (2002) reported 17.48% seropositivity of BoHV in buffaloes. The genital form is said to last for a period of two to three weeks and some of the other symptoms include moderate pyrexia, hyperaemia, or oedema of the genital mucosa with presence of small red to white ulcers that develop into pustules ranging from 0.5 – 3mm in diameter (Snowdon 1964). There may be thick yellow or white mucopurulent exudate present especially if there is secondary bacterial infection. These lesions are said to heal 10-14 days after the onset of the disease but in some animals, purulent discharge lasts for several weeks (Turin *et al*.2003). Similarly, in the present case there was a remission of the lesions with 15 days. Bovine Herpes Virus infection is considered as an endemic disease in India. Many studies have been conducted to record the seroprevalence of BoHV- I virus from different states - The prevalence of IBR was found to be 33.9 to 62.7%, in different states throughout India (Farooq *et al* 2021, Thakur *et al* 2017, Kathiriya *et al* 2018). BoHV-I has also been reported from apparently healthy cattle (Narang *et al* 2020).

Haematology revealed absolute neutrophilia indicating a certain degree of systemic involvement as well. The current methods of diagnosis of BoHV1 include virus isolation, examination of tissues by FAT, antigen detection by ELISA and one of the most frequently used tests is virus isolation in cell culture. (Majumder *et al*.,2015). On experimental inoculation of the virus into the udder tissue it was found the lesions observed was a result from the necrotizing effect of the virus upon the epithelial cells of the alveoli and ducts leading to inflammation of the udder along with gross obvious changes in the milk. They also observed

eosinophilic intranuclear inclusion bodies that were demonstrated in tissues (Corner *et* al 1967), which may have been the cause of the pustular round lesions on the udder and mastitis seen in this case. This report on Infectious pustular vulvovaginitis suggests that IPVV must be considered in the differential diagnosis of diseases with a history of abortion and genital signs. Although virus isolation is central to confirm the diagnosis but progression of clinical signs and uneventful recovery response to treatment can aid in diagnosis and prognosis of the condition.

Conclusion

Infectious pustular vulvovaginitis becomes an important disease economically as may lead to abortion in a cow. The present communication recommends inclusion of Infectious pustular vulvovaginitis as a differential for history of abortion and genital signs in a cow. Although virus isolation is required for confirmatory diagnosis, diagnosis of IPVV can be made by clinical signs and characteristics lesions correlated with the history of recent abortion. Accordingly, treatment can be planned and prognosis can be conveyed to the farmer.

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Fig. 1 : Round white raised lesions on vaginal mucous membranes

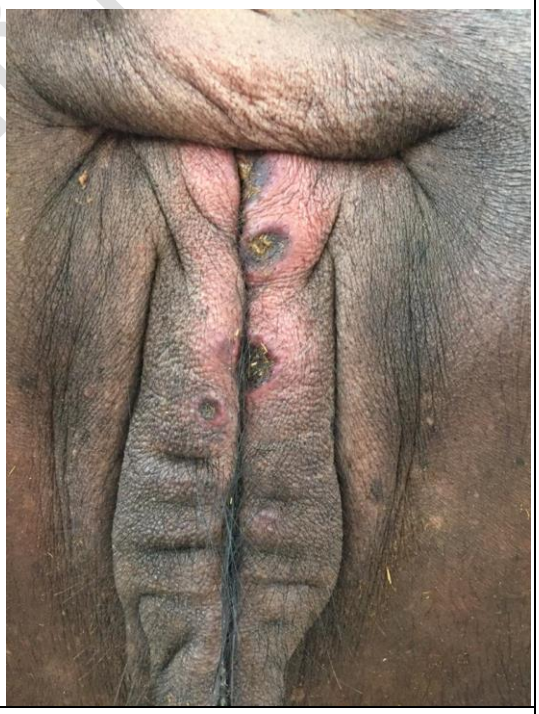

Fig. 2: Round white raised lesions on vulval lips

Figure 3: Raised circular lesions with dark discolouration in the centre (on surface of udder