

Clinical Article

**A CASE REPORT OF MASTITIS DUE TO *LEPTOSPIRA* IN A JERSEY
CROSS BRED COW**

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Abstract: A Jersey cross bred cow aged 6 years was presented for the treatment with a history of sudden drop in milk yield and blood tinged milk with flakes from left fore teat. On clinical examination, it was found that left teat had an external lacerated wound and the body temperature was slightly elevated. The animal was treated with Enrofloxacin at the rate of 5mg/kg body weight intramuscularly and Meloxicam 10 ml intramuscularly for 3 days. The external lacerated wound was treated with a herbal ointment. Haematology revealed no abnormalities and no significant bacteria were isolated from the collected milk samples. On 4th day blood mixed milk was also observed from left hind teat. Hence, the condition was suspected for Mycoplasmal or Leptospiral mastitis and was treated with long acting tetracycline at the rate of 20 mg/kg BW intramuscularly, flunixin meglumine (2.2 mg/kg body weight intravenously) and a mixture of tylosin 500 mg and tetracycline 450 mg as an intramammary infusion. On 8th day, second dose of long acting tetracyclins were given additionally and the condition resolved within 9 days and no recurrence was noticed. Paired serum samples were sent for conducting Microscopic Agglutination Test (MAT) and the samples were found positive for different leptospiral serovars like *Icterohaemorrhagiae*, *Javanica*, *Hardjo* and *Hebdomadis*.

Keywords: *Leptospira*, Mastitis, Microscopic Agglutination Test, Oxytetracyclins.

Introduction

Leptospirosis is an important emerging zoonotic disease because of its epidemic presence and increasing incidence in both developing and developed countries (Meites et al., 2004). Mastitis caused by *Leptospira* is also known as flabby udder disease in cattle. Leptospirosis is caused by number of serovars like *Hardjo* or *Pomona* (Balakrishnan et al., 2009). In general *Leptospira* spp. Serovar *Hardjo* has been reported to be a major cause of reduced fertility, abortion, birth of weak calves, agalactiae (Dhaliwal et al., 1996) and also leptospirosis in humans [Smythe et al., 1997). Approximately 200 different serovars of pathogenic *Leptospira* have been identified throughout the world. Leptospirosis is known to

be endemic in India, since the early 20th century (Barker, 1926). Direct transmission occurs when leptospire from tissues, body fluids or urine of acutely infected or asymptomatic carrier animals enter the body of the new host and initiate infection. This article presents a peculiar case of mastitis due to different serovars of *Leptospira* in a jersey cross bred cow with the involvement of only two teats.

Case history and Observations

A jersey crossbred cow aged 6 years was brought to the College Veterinary hospital, Tirupati with the history of sudden drop in milk yield and blood tinged milk from the left fore teat since 2 days. Clinical examination revealed slightly elevated temperature and left fore teat had an external laceration (Fig. 1). Milk was reddish in colour with flakes (Fig.2), where as the other teats had apparently normal milk. California Mastitis Test revealed thick gel formation with the affected milk. Milk sample from the affected teat and whole blood was collected and sent for cultural examination and haematological examination respectively.

Treatment and Discussion

The animal was treated with Enrofloxacin at the rate of 5mg/kg body weight intramuscularly and Meloxicam 10 ml intramuscularly for 3 days. The external lacerated wound was treated with a herbal ointment. All haematological parameters were within the normal range and no bacteria were isolated on cultural examination. But after 3 days, blood tinged milk was also observed from the left hind teat and this teat had no external injury. As no bacterial growth was isolated it was suspected for *Mycoplasma* mastitis or *Leptospira* mastitis as milk from two teats were blood tinged. Hence, therapy was changed to long acting tetracyclins at the rate of 20 mg/kg BW intramuscularly, flunixin meglumine (2.2 mg/kg body weight intravenously) and a mixture of tylosin 500 mg and tetracycline 450 mg as an intramammary infusion on 4th day. By next day, mild improvement was noticed and was treated with the same doses of flunixin meglumine, ethamsylate and a mixture of tylosin and oxytetracycline. Reddish discoloration of milk was reduced from both the quarters with moderate amount of gel formation on testing with California Mastitis reagent by 6th day. On 7th day no reddish discoloration, but flakes were observed in the milk of both the teats. Additionally second dose of long acting tetracyclins was also given on 8th day. By 9th day the milk was completely normal without any flakes.

The clinical signs observed like sudden drop in milk, abnormal milk which is blood tinged from two quarters, soft and flabby left quarters were in partial correlation with Ellis et al., (1982) who stated that the organism mostly responsible for the 'milk drop syndrome' is

Leptospira hardjo and the characteristic milk drop appears initially as a mastitis. Durfee and Allen (1980) stated that normally all the four quarters will be affected in mastitis caused by *Leptospira* species. On the contrary in the present study, only two teats of left quarters were affected. This was in coherence with the findings of Sivaraman et al., (2012) who recorded a case of *Leptospira* causing hemorrhagic mastitis in a Gir cow with the involvement of only one quarter. Similarly, Saravanan et al., (2016) also reported leptospiral mastitis in a HF cow with a blood tinged milk only from the left hind quarter of the udder. Alt et al., (2001) stated that oxytetracycline is effective for resolving leptospirosis in cattle.

Later, serum samples were sent to *Leptospira* zoonosis research laboratory, Chennai for conducting Microscopic Agglutination Test. The serum sample was found positive for several leptospiral serovars like *Icterohaemorrhagiae* (1:400), *Javanica* (1:400), *Hardjo* (1: 200) and *Hebdomadis* (1:100). Usually the cattle may be infected with serovars *Hardjo-ovis*, *Pomona*, and *Grippotyphosa*. But, Faine (1982) reported that infection with *Icterohaemorrhagiae*, *Bratislava*, *Hebdomadis*, *Autumnalis*, *Australis*, *Sejroe*, *Canicola* and *Bataviae* also occurs. Saravanan et al., (2016) also reported the mastitis due to serovar *Autumnalis* and *Pomona* in his study. Victoriano et al., (2009) reported *Javanica* as a predominant serovar in India.

However, fresh serum sample was again sent after two weeks for detecting rise or decrease in the titre. All the titres of the leptospiral serovars were increased like *Icterohaemorrhagiae* (1:1600), *Javanica* (1:800), *Hardjo* (1:400) and *Hebdomadis* (1:100) indicating severe infection. Two serogroups reacting strongly during first four weeks of infection indicates possibility of double infection. A MAT titre of 1:100 or above is taken as positive reactor as per WHO/OIE manual for leptospirosis. High titres over 1/300 indicate recent exposure to infection. The MAT measures mainly IgM antibodies, which titres peak after 10 to 20 days but decline within 6 to 12 months (Ngbede et al., 2013). The milk from the affected cows is unfit for human consumption as it causes the spread of leptospirosis and has zoonotic importance (Sharif et al., 2009) and more over particularly organisms of the *Hebdomadis* subgroup are highly pathogenic for man.

Initially the blood tinged milk from one teat was thought to be due to external teat laceration. But, it spread to the hind teat after 3 days treatment which had no external injury. However, the case was successfully treated in 9 day and no recurrence was observed.

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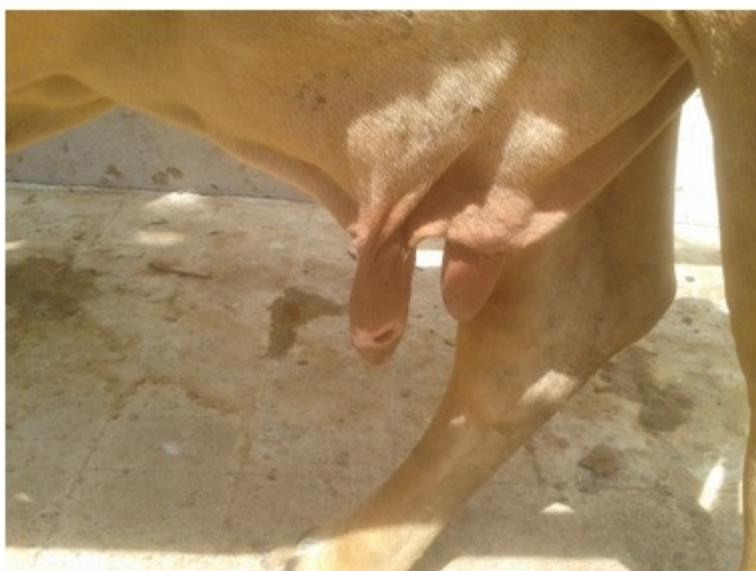


Fig.1 Affected left fore quarters with external lacerated wound



Fig.2 Blood tinged milk from left fore teat