Indian Vet. J., April 2024, 101 (4) : 65 - 67 https://doi.org/10.62757/IVA.2024.101.4.65-67

Successful Treatment of Rare Cause of Mastitis (*Pseudomonas Sp.*) in a Transition Cow

M.Venkatesan[1]*, K. Jayalakshmi[2], A.Ramya[3], R.Ravi[4], D. Sumathi[5] and K.K. Ponnu Swamy[6]

Veterinary Clinical Complex,Veterinary College and Research Institute, Salem – 636112, TANUVAS, Tamil Nadu, India.

(Received : January, 2024 21/24 Accepted : March, 2024)

Abstract

A Holstein Friesian cross-bred cow with two calving presented to a large animal medical outpatient unit in the Veterinary Clinical Complex, Veterinary College and Research Institute, Namakkal with a history of loss of appetite, swelling of right fore and hind quarter and with orange-colored flakes in the milk. Physical examination revealed no systemic abnormality. Affected quarter milk was collected for culture and revealed pseudomonas infection. The animal was continuously treated with Gentamicin and Enrofloxacin based on ABST for a week and uneventfully recovered after ten days.

Case History and Observations

A two parity Holstein Friesian cross-bred cow weighing 350 kg with twenty days of lactation was presented to a large animal out-patient unit with a history of inappetence, swelling of the right fore and hind quarter, and milk was orange colored with flakes. The owner reported that the animal was treated for the same condition by a practicing veterinarian with ceftriaxone intramammary preparation and NSAIDS systemically, Ayurvedic hemostatic (Styplon Vet, Himalayan Animal health),and fibrinolytic (Serakind plus, Vetmankind Pvt.Ltd.)preparation orally for three days before presented to the hospital. On clinical examination, no systemic abnormality was observed. Upon physical examination of the udder, right fore, and hind quarters were moderately firm, with pain on palpation, compared to other quarters. (Fig 1a and 1b). The affected quarter milk was orange in color with flakes. Californian Mastitis Test (CMT) revealed a grade of (+++).

The milk sample was cultured in nutrient broth on the first day and streaked in culture medium agar on 2nd day. The pure colony of *Pseudomonas* spp isolated was then subjected to an Antibiotic sensitivity test (ABST) in the Muller Hinton agar plate. Upon ABST results showed Gentamicin 10mg (25 mm), Enrofloxacin 10mg (29 mm), Oxytetracycline 30mg (22 mm) and Sulfa-trimethoprim 25 mg (20 mm) antibiotic disc showed sensitivity against *pseudomonas* culture.

Treatment and Discussion

The animal was treated with an antibiotic combination Inj. Gentamicin @ 5 mg /kg body weight IV and 10 mL intramammary was given for 7 days, inj. Enrofloxacin 2.5 mg /kg body

**Corresponding author* : Email : drvenksmvsc88@gmail.com
[1]Assistant Professor, Veterinary Clinical Complex, Veterinary College and Research Institute, Salem – 636112, Tamil Nadu Veterinary and Animal Sciences University, Tamil Nadu, India.
[2]Assistant Professor, Veterinary Clinical Complex, Veterinary College and Research Institute, Orathanadu – 614 625, Tamil Nadu Veterinary and Animal Sciences University, Tamil Nadu, India.
[3]Assistant Professor, Department of Veterinary Microbiology, Veterinary College and Research Institute, Namakkal – 637 002, TANUVAS, Tamil Nadu, India.
[4]Assistant Professor, Department of Veterinary Clinical Medicine, Veterinary College and Research Institute, Namakkal – 637 002, TANUVAS, Tamil Nadu, India.
[5]Professor, Department of Veterinary Clinical Medicine, Veterinary College and Research Institute, Namakkal – 637 002, TANUVAS, Tamil Nadu, India.
[6]Professor and Head, Department of Veterinary Clinical Medicine, Veterinary College and Research Institute, Namakkal – 637 002, TANUVAS, Tamil Nadu, India.

Fig 1. Swollen udder – Right fore and Hind-quarter (on day of the present)

Fig 2. Nolmacy of udder – Right fore and Hindquarter (7th day of Treatment)

Fig 3. Nolmacy of udder – Right fore and Hindquarter (10th day of Treatment)

Fig 4. Haemorrhagic milk - Right fore and Hindquarter (on the day of the present)

Fig 5. Whitish milk - Right fore and Hind-quarter (on the 7th day of the Treatment)

Fig 6. Whitish milk - Right fore and Hindquarter (on the 10th day of the Treatment)

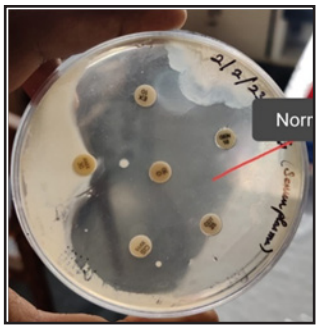

Fig 7. ABST result shows Blurry transparentin Muller Hinton Agar medium.

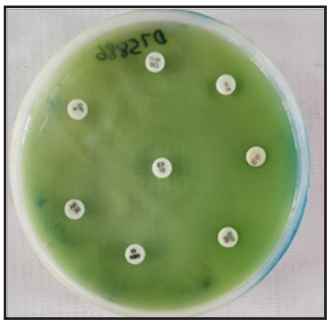

Fig 8. Greenish discoloration of Muller Hinton Agar medium due to *Pseudomonas sp*. infection)

weight IM, inj. Tranexamic acid @ 5 mg/kg body weight IM was given for 7 days, Inj. Meloxicam @ 0.5 mg /kg body weight IM was given for 5 days, inj. Vit AD_3E 10mL IM was given for 3 doses on alternate days. Suspension E care se (Vetcare) 20 mL was given orally for 10 days, and MASTILEP ointment (Ayurvet) was applied topically on the affected quarter for 7 days. Park *et al.* (2014) detected the effectiveness of antimicrobial treatment against *P. aeruginosa* related bovine mastitis and discovered that most isolates were susceptible to gentamicin, amikacin, meropenem, and ciprofloxacin. Levofloxacin, streptomycin, and enrofloxacin were the antibiotics that *P. aeruginosa* strains responded to the most, followed by gentamicin, moxifloxacin, and amikacin. (Yadav *et al.,* 2020). Du Preez (2000) reported local and or parenteral therapy with

carbencillin, colistin, gentamicin and Polymyxin B effective against mastitis caused by *Pseudomonas aeruginosa*.

From 3rd day onwards swelling of the udder was reduced. From the 7th day onwards, the color of the milk returned to normalcy (Orange color to white without flakes), and CMT was negative. The animal's appetite improved from 2nd day onwards. Suthan et *al.* (2010) reported that a Holstein-Friesian cross-bred cow affected by Pseudomonas mastitis showed complete recovery within a span of 12 days after treatment with ABST.

Gram-negative environmental pathogens include *Escherichia coli*, *Klebsiella spp., Enterobacter spp., Serratia spp.* and *Pseudomonas spp*. are prevalent in a cow's environment and are frequently to blame for the majority of clinical instances of mastitis. (Quinn *et al.,* (2002). Saravanan and Palanivel (2020) reported *Bacillus sp.* caused acute gangrenous and haemorrhagic mastitis in a periparturient cow. Banerjee *et al.* (2017) concluded that approximately 5.4% of the subclinical mastitis cases of bovines in different districts of mainly South Bengal, may be caused by pathogenic *P. aeruginosa* strains. In this present case, the owner claimed that three days before being brought to the hospital, the animal had received ceftriaxone intramammary preparation for the treatment of udder swelling from a practicing veterinarian.

Considering findings of this case, we concluded that *Pseudomonas spp* mastitis is rare and can affect animals in any part of the lactation. This case report gives the unusual color of milk (hemorrhagic with clots) in mastitis caused by *Pseudomonas spp*.

Acknowledgment

All authors are thankful to the Dean, Veterinary College and Research Institute, Namakkal, Tamil Nadu, TANUVAS – 637 002 for providing facilities to carry out this study.

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