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Clinical management of Pseudo-cowpox and its zoonotic significance: A report of three cows

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Abstract

Three female crossbred cows with varied age of 2-4 years were presented with a history of teat lesions. Physical examination of udder of all the cows revealed eruptions of multiple small red papules, at different stages of disease, limited only to teats. All the animals did not show any other systemic signs of illness. The typical lesions were also noticed on the milker's fingers, hand and forearm. Limitation of lesions to the teats, circular in shape, that change to horse shoe-shaped rings during time and presence of similar lesions on milker's fingers was enough to diagnostic confirmation of pseudo-cowpox. All the affected cows were treated with topical broad-spectrum antibiotic ointment along with multivitamins with complete recovery in 20 days after initiation of treatment and no relapse occurred for five months.

Keywords: Pseudo-cowpox, acute, zoonotic, milkers' nodules, horseshoe-shaped, management

1. Introduction

Pseudo-cowpox is a worldwide disease of cattle caused by member of the genus *Parapoxvirus*, with close similarity to viruses of infectious popular stomatitis (bovine) and contagious ecthyma (sheep & goat). Freshly calved and recently introduced adult cattle are most susceptible groups to disease ^[1]. The lesions of pseudo-cowpox are usually confined to the teats of cattle, but may also develop on muzzles and in mouths of nursing calves ^[2]. Symptoms include ring or horse shoe shaped scabs on teats, which usually heal within six weeks ^[3]. Spread is by fomites, including hands, calves' mouths and milking machines. In human, infection is generally occupational, affecting milkers or other personnel in contact with affected animals, causing lesions called Milker's nodule ^[4]. This disease in humans is nearly identical to 'Orf' ^[5]. Pseudo-cowpox is relatively benign, most losses occur as a result of difficulty in milking and increased incidence of mastitis ^[1]. Parapoxviruses are also important in the differential diagnosis of vesicular diseases such as foot and mouth disease (FMD) and vesicular stomatitis virus.

Information on pseudo-cowpox infection in cattle is very scarce in the literature; possibly due to the mild presentation of the disease. The report highlights prevalence of disease and seems to be the first report of acute pseudo-cowpox lesions in the district of Amritsar. On the other hand, the disease has zoonotic importance and farmers are not aware and many times remains undiagnosed because of its self-limiting nature unless secondary bacterial infection invalid causing mastitis.

2. History and Diagnosis

Three female crossbred cows with varied age of 2-4 years were presented to Veterinary Clinical Complex, Khalsa College of Veterinary and Animal Sciences, Amritsar with the history of teat lesions. Physical examination of udder of all the cows revealed eruptions of multiple small red papules, at different stages of disease, limited only to teats (Fig.1, 2 and 3). These acute types of small papules (Fig. 2) also occurred on pigmented as well as unpigmented area of the skin (Fig. 3) and gave rise to vesicles with central depressions and later transformation into pustules, which ruptured after about 48 hours. This was followed by profuse scab formation (Fig. 1). According to the owner, udder and teats were very sensitive to pain and all the affected cows used to kick while being milked. All the animals were alert and afebrile with normal appetite. The affected cows were in 1st-3rd lactation. There is no significant effect on milk production and no visible abnormality in milk.

After examination all the cows, suspecting to pseudo-cowpox, the milker's hands were examined to evaluate the probable zoonotic disease and numerous painless lesions 1-2 cm in diameter, were observed on his right hand's fingers and forearm. These lesions were appeared after a week of frequent milking of these affected cows.

There is no specific treatment for pseudo cowpox, and diseases cure itself only unless secondary bacterial infection does not occurs. Hence symptomatic treatment was given to all the cows, which included ointment (Neomycin sulphate + Bacitracin zinc) were applied topically over the teats thrice a day to avoid secondary bacterial infection along with multivitamins which was given orally twice a day. The milker was advised to use gloves during milking. After 10 days of treatment the healing lesions, which varied from about 0.5 cm to 2.0 cm in diameter, showed the characteristic "horseshoe-shaped ring" of minute scabs around their circumference (Fig. 4). The owner was advised continue to apply ointment for next ten days and follow up thereafter a week. After 20 days of treatment the owner informed that all the cows were completely recovered and no relapse occur for five months.

3. Treatment and Discussion

The lesions are usually confined to the teats, circular in shape, that change to horse shoe-shaped rings during time and presence of similar lesions on milker's fingers was enough to diagnostic confirmation of pseudo-cowpox. Observed clinical

findings with no systemic signs of illness in this case were similar as described by White ^[6] and Constable *et al.* ^[11]. The size of horseshoe-shaped lesions in affected animals was comparable with the reports of ^[4]. In this case, typical lesions observed on milkers's hand were similar to the classical raised, rounded, purplish, indurated "milkers' nodules" ^[7].

Antioxidants, minerals and multivitamins play important role in immune function, which in turn can influence the health of mammary gland in transition dairy cows ^[8]. The Merck Veterinary Manual ^[9] observed that the infection spreads slowly throughout milking herds and variable percentages of cows' shows lesions at any time. In the present case, the spread of disease from one animal to another may be due to milkers, who had milked the milch cows. The pseudo-cowpox was disappeared within 20 days from the herd, without recurrence was correlated with the reports of Constable *et al.* ^[11].

As the virus cannot penetrate mucosa, therefore, efforts should be made to reduce teat trauma because infection is facilitated by discontinuity of skin. The spread of the disease was controlled by adopting measures suggested by Constable *et al.* ^[11] like dipping of teats in iodophor, segregating and milking the infected animals at the end of the milking schedule, hygienic procedures to be adopted by milkers like washing their hands with antiseptics solutions before and after milking and preventing exposure of healthy persons to diseased cows.



Fig 1: Pseudo-cowpox lesions covered by thick scabs (1st cow)



Fig 2: Multiple small erythematous papules (2nd Cow)



Fig 3: Papules present on pigmented and non-pigmented area of the skin (3rd cow)



Fig 4: Formation of horseshoe-shaped scabs during treatment (1st Cow)

4. Conclusion

Case of pseudo-cowpox in three crossbred cows was successfully treated and managed using broad-spectrum antibiotic ointment along with supportive therapy. Also, pseudo-cowpox is a zoonotic disease which infects milkers with cutaneous lesions that are termed as Milker's nodules, who in turn can transmit the disease to healthy cows while milking.

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