Contagious Ecthyma in Black Bengal crossbred goats and its therapeutic management

Pradeep Kumar Ram, *Pramod Kumar

Animal Production Research Institute, Dr. Rajendra Prasad Central Agricultural University, Pusa, Samastipur, Bihar, India
*Corresponding email: pramod123ndri@gmail.com

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Article Authors
Pradeep Kumar Ram, Pramod Kumar

Corresponding Author Email
pramod123ndri@gmail.com

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ABSTRACT
Contagious Ecthyma or Orf is an acute, highly contagious, zoonotic, epitheliotropic, debilitating and economically important viral disease of sheep, goats, camel and wild animals. It is caused by parapoxvirus (PPV) or orf virus (ORFV). The present study deals with Contagious Ecthyma which was observed in Black Bengal and Boar crossbred goats in Goat farm of Dr. Rajendra Prasad Central Agricultural University, Pusa, Samastipur, Bihar. Out of eighty five goats at farm, thirty six were found affected. Physical examination revealed presence of ulcerative, dry, scabby lesions on the mouth, mucous membrane of the lips and gums with great variations from mild to extensively severe form. Auscultation revealed a significant crackling sounds suggestive of pneumonia. Affected goats were found dull, depressed and anorectic. The physical parameters like body temperature, pulse rate and respiration rate were found elevated. It was clinically diagnosed as contagious ecthyma. All affected goats were isolated and treated with Anti-inflammatory (Meloxicam), Antihistamines Pheneramine maleate (Alervil), Antibiotic Enrofloxacin and Broxone syrup for 5 days. The solution of potassium permagnate 1:10,000 was applied on lesions along with topical application of Himax ointment twice daily on the lesion till recovery. Complete recovery was noticed in 2 weeks in all goats except one female kid which died on 5th day of treatment.

KEYWORDS
Contagious Ecthyma, Orf, Pyrexia, Anorectic, Lameness, Pneumonia

HOW TO CITE THIS ARTICLE

Goat rearing being a traditional farming practices among the rural poor in India. It is considered as “Poor man’s cow” or ATM. Goat is also susceptible to viral infections which affect its health, production and reproduction. Among viral infections Contagious Ecthyma is a frequently occurring viral disease of sheep and goat. It is also known as Orf, Ecthyma Contagiosum, Contagious Pustular Dermatitis, Contagious Pustular Stomatitis, Infectious Labial Dermatitis, Sore Mouth and Scabby Mouth (Thomas et al., 2003, CDC, 2015, Nandi et al., 2011). It is caused by a linear double-stranded DNA virus which belongs to family Poxviridae under the genus Parapoxvirus (PPV) (Nadeem et al., 2010, Murphy et al., 2012, Spyrou and Valiakos, 2015). It is quiet resistant and may survive for several months in cool and dry environment.

But, it destroys at high and very low temperature and in UV light. (Mckeever and Reid, 1988). This virus is epitheliotropic and it affects the skin around mouth and muzzle. It is a prevalent worldwide in Sheep and goat (Nandi et al., 2011). Infection of skin and oral mucosa causes an erythema that quickly progresses to pustules and then leading to hypertrophic and hyperplastic lesions with scab and crust formation (Matthews, 2013). Infected animals typically develop the characteristic lesions in a sequence of papules, vesicles, pustules, scabs around the mucous membranes of lips, muzzle, and mouth. This virus can also spread to other parts of the body such as the vulva, udder, beneath the tail and scrotal sac (Baiopoledi et al., 2002, Kumar et al., 2015, Nandi et al., 2011).

In more severe cases, the skin of the eyes and feet may be affected (Allworth et al., 1987, McKeever et al., 1988). Transmission occurs through direct contact with infected animals or through environment or contaminated material which harbors the virus. The virus enters the host through breaks on the skin and replicate in the epidermal cells leading to formation of lesions (Kumar et al., 2015). Infection with orf virus is usually benign and animals recover spontaneously in 3 to 5 weeks (Kumar et al., 2015).

The disease is common in young animals in 3-6 months of age, but adult animals also affected (Ndikuwera et al., 1992). Risk factors for Orf virus infection includes age, congestion due to increased stocking density, increased orphaned lambs, stress, immunosuppressive diseases, prolonged parturition and forage weeds (thorny plants) (Abdullah et al., 2015 and Onyango et al., 2014). In the face of its outbreaks morbidity can be as high as 100%, whilst mortality is usually near 1%. Mortality may be higher in case of severe secondary bacterial complications, stress, immune suppression or concomitant disease and can exceed up to 90% in the case of malignant Orf (Hosamani et al., 2009, Scaglierini et al., 2006). Without secondary complications Orf is usually a self limiting disease with lesions typically recovering within six weeks of onset with recovered animals remaining immune from re-infection for a few years (Matthews, 2013).

Contagious ecthyma outbreak occurs more frequently during period of extreme temperature like end of summer and winter. Orf cases are more often noticed in pasture feeding under drought conditions. Herd prevalence rates of this disease usually are higher in goats than sheep (Scaglierini et al., 2012). Differential diagnosis of clinical signs and lesions of Orf often difficult from those of other diseases that cause lesions of the mouth, nose and face, including capripox virus, foot-and-mouth disease (FMD), parasitic mange, blue-tongue, staphylococcal infections and other dermatologic disorders (Matthews, 2013, Spyrou and Valiakos, 2015). Although lesions from orf and FMD viral infections are potentially distinguishable based on clinical signs as Orf induces visible epithelio-proliferative lesions, whereas, FMD does not (Nandi et al., 2011). Diagnosis of Orf infection can be made through observation of scabby skin lesions around the mouth, legs or teats, histopathology of skin lesions and serological testing for presence of antigen or antibody (Kumar et al., 2015, Sadiq et al., 2017). It is of high economic importance. It leads to weight loss due to reduced feed intake because of painful lesions in and around the mouth, particularly in young animals (Abdullah et al., 2015).

**Clinical History and Observation**

The present study was done in the month of February, 2020 at Livestock Unit of Dr. Rajendra Prasad Central Agricultural University, Pusa, Samastipur, Bihar, India. Fifty six Black Bengal and Boer crossbred goats were having symptoms of dullness, depression, anorexia, mucous discharge and sneezing since two days. Auscultation revealed a significant crackling sounds suggestive of pneumonia. Clinical examination revealed elevated body temperature (104.5-105.2°F) as well as slightly accelerated pulse and respiration rate. The lesions were mild to severe, but were confined to the skin around the mouth, gums and lips with offensive odour. Later on lesions progressed from papules to pastules followed by thick crusts formation. The affected kids were unable to suck milk from udder of mother. In the present study diagnosis of disease was made on the basis of clinical symptoms and lesions.

**Treatment Protocol**

After symptomatic diagnosis the affected goats were immediately separated and isolated from the healthy flock. As contagious ecthyma (Orf) is highly communicable and its zoonotic potential is well documented, symptomatic treatment was initiated to all affected goats. Proper disinfection of premises of goat house and incineration of all contaminated materials extracted from sick goats were performed. The solution of potassium permagnate 1:10,000 was applied on lesions (crust). Himax ointment was applied twice daily topically on the lesion till complete recovery. Meloxicam (Melonex) injection @ 0.5 mg/ Kg body wt., Antihistaminic drug Pheneramine maleate (Alervil) injection @ 2ml and Antibiotic Enrofloxacin (Enerox) @ 1ml/20 Kg body wt. administered intramuscularly for five days. Liver supplement (Brotone syrup) @ 5ml per goat per day orally was given for 5 days. Drastic improvement in the clinical condition was observed after five days.
Fig 1. Lesion of Contagious ecthyma on mouth, lips and muzzle of Goats

Fig 2. Goats showing recovery 10 days post treatment

Clinical examination revealed normal physical parameters like body temperature, pulse and respiration rate in all the goats.

Discussion

Antibiotic Enrofloxacin was found to be very effective for treatment of pneumonia and control of secondary bacterial infection.
It belongs to fluoroquinolones group and is a potent DNA gyrase inhibitor causing bactericidal action (Prescott and Baggot, 1994). It is active against most of gram positive and gram negative bacteria. Meloxicam was found to be effective in reducing inflammatory change and relieve the animals from pain and pyrexia. It is evident that prehension and mastication are altered due to severe involvement of lips, buccal mucosa and tongue as also observed in the present study. Karunanithi et al. (2006) who used Ayurvedic treatment like Neem oil and Turmeric paste or glycerin and boric acid paste on external lesions of Orf infection.

Antihistaminic drug, Pheneramine maleate was found to be effective to control sneezing and nasal discharge. This approach agrees with (Radostits et al. 2007, Nandi et al. 2011) who reported supportive treatment that includes the topical application of ointments or astringent lotions and systemic antimicrobial administration against secondary bacterial complications may speed recovery (Zamri-Saad and Roshidah, 1993). Nandi et al. (2011) described that orf infection in Boer and Boer cross goats are characterized by multifocal, severe proliferative dermatitis combined by chronic pneumonia, arthritis and moderate to severe lymphadenopathy. The goats showed signs of pneumonia which could have been precipitated by extension of the lesion into the respiratory tract or secondary bacterial complication.

The clinical pictures of present cases are in agreement with (Kumar et al., 2015, Abdullah et al., 2015) who mentioned vesiculo-proliferative lesions on the external and internal surfaces of the mouth, lips, face, ears, nostrils, scrotum, udder, vulva and inter digital region characterized the disease in sheep and goats. Commercial vaccine for orf is available, but not popular, because it gives less than excellent immunity and mortality rate in this disease is too low. In present study, the affected goats were completely recovered in 10 days except three goats which took 16 days and one kid who died on 5th day of treatment.

Conclusion

In Orf mortality is usually very low but high morbidity results into economic loss. Prompt diagnosis, treatment with effective antibiotics and improved management gives better prognosis.

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