



Original Article



Prevention and Treatment of Contagious Ecthyma in Sheep and Goat by Goat-Pox Vaccine in Khuzestan Province, Iran

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ABSTRACT

Contagious ecthyma (CE) in sheep and goats is a native infectious and zoonotic disease in the Khuzestan province for many years because there is no any specific contagious ecthyma vaccine in this country (Iran). Therefore, the disease happened with the high prevalence and low mortality especially in young animals and caused countless significant economic losses each year. It is a contagious viral disease and there are no any methods for treatment and prevention of the disease. Therefore, for control of out breaks and treatment of sick animals, goat-pox vaccine been used in three herds located in different districts. In the examined herds there were lambs, kids and sheep and goats showing characteristic signs of CE in 566 (38.2 %) of the 1481. The result of vaccination after three to four days was successful, no new cases were seen and the sick animals recovered rapidly. Therefore, it is declared that the Razi-institute goat pox vaccine made from native strain virus could prevent and treated the contagious ecthyma disease in infected animals in Khuzestan province herds. This field trial done for the first time in Khuzestan province and Iran.

Key words: Prevention, treatment, contagious ecthyma, sheep and goat, goat-pox vaccine, Iran

INTRODUCTION

Contagious ecthyma (CE), known as contagious postural dermatitis or Orf, is a specific skin-disease of small ruminants, caused by a parapox virus of the family poxviridae [1-4]. The disease is common in young animals in 3-6 months of age, but a few mature animals may also be affected [1, 4-5]. It has worldwide distribution and is found particularly in sheep and goat farming countries [1, 3, 6-8]. CE occurs at any time of the year without any considerable relation to a season, but is more common during spring and summer mainly among lambs and kids [1, 3]. Lesions are most commonly localized in and around the mouth and nostrils. The lesions in clinical term, progress through the erythematous macula, papule, vesicle, pustule and scab formation [1, 3, 5]. In uncomplicated CE, natural recovery takes three to six weeks, with shedding of scab materials contaminated with virus [1, 3, 5]. Prolongation of the infection and an increase in severity are nearly associated with secondary bacterial infections [1, 4-5, 9]. Some infected animals become carriers and shed the virus for a long period. The virus persists in the environment and remains infective for years to susceptible animals and humans, too [1, 3, 10-11]. The economical importance of CE can be considerable. The morbidity of the disease can be very high, approaching 100%, but the mortality rate in uncomplicated cases rarely exceeds 1%. In this regard, secondary staphylococcal infection is a frequent occurrence and mortality rates may its range be from 20% to 50% in contaminated herds [1, 3, 5]. The mortality occurs, especially in young sucking lambs, due to a incidence of dehydration and starvation, as the pain and distortion of the lips and mouth preclude the lamb from sucking. The lambs affected by the mouth form or with strawberry footrot show considerably reduced growth performance. In Khuzestan province (south west of Iran), sheep farming is a major animal husbandry, where CE is endemic diseases in country. In addition, there are few published reports related with CE in Khuzestan province indicating the occurrence of the disease in sheep, lambs, goats and kids [12]. While clinical CE is commonly observed, there are no published reports on the prevalence of CE in Khuzestan province. So, the aim of present study was to determine the clinical prevalence of EC in three different locations of this region, additionally, reporting of

macroscopic lesions of CE in affected animals, and controlled this outbreak with vaccination of the flocks with goat pox vaccine.

MATERIALS AND METHODS

One thousand and four hundred eighty one native breeds of lambs, kids, goats and sheep in three flocks ranged from three months to three years were examined from three different cities/regions of Khuzestan province. The diagnosis based on clinical signs and necropsy findings. Not all animals had been vaccinated against any pathogen when the study commenced. The number of affected animals used in this study and percentage of death, infection, mortality and morbidity from each farm is shown in the table. A routine clinical examination was carried out and the lesions of CE were recorded in all animals. Capripox vaccine was used with cold chain, obtained from Razi-institute (Karaj- Iran) for the infected herds with higher doses of 1ml per sheep and goat and 0.5ml per lamb and kid via subcutaneous injections.

RESULTS AND DISCUSSION

The CE for many years seen in different locations of Khuzestan province in sheep and goat herds, wherever sheep are raised in local and nomadic herds the disease causes a thriftiness and economic losses [12]. The diagnosis based on characteristic signs and necropsy findings, on clinical examination, the lesions were found to be proliferating on the lips, skin, nostrils and gingival tissues [figure 1, 2]. In most of the kids the lesions were moderate, but in most of the contaminated lambs the lesion complicated by other pathogens. Some of the contaminated animals for differential diagnosis slaughtered and typical lesions were seen in the rumen and reticulum [Figure 3].



Figure 1. Contagious ecthyma in a native breed sheep. Lesions on the nose, lips, tongue and gingival mucosa.



Figure 2. Contagious ecthyma in kid. The skin is thickened and reddened.



Figure 3. Contagious ecthyma in young sheep. Proliferative lesions on the rumen and reticulum.



Figure 4. Contagious ecthyma in young sheep. Severe diarrhea.

In each of the three different studied districts, characteristic signs of CE, with lesions observed in 566 (38.2 %) of the 1481 [Table]. In one district, Shushtar region, there was an outbreak with 83.7% of the lambs showed severe lesions of CE. The lesions over the coronets in particular were thick

and wart-like, and when the scabs were removed, bleeding occurred and fleshy mass surrounded by a shallow ulcer. These lesions become ulcerative and necrotic without scab formation, the healing time was delayed and there was continual rubbing. The lesions were covered with purulent materials indicating the presence of secondary bacterial contamination. Many of the affected lambs developed diarrhea and lost their brightness [Figure 4]. In addition, some of lambs did not appear systemically ill and their appetite was normal. However, they were not able to eat because of the presence of painful lesions on the lips and gingiva. Fourteen lambs (1.61%) were found dead in flocks from Ahwaz, also twelve sheep (3 %) were found dead in flocks from two other districts, namely Shushtar (6 sheep) and Behbahan (6 sheep). One kid (0.66 %) and one goat (1.58 %) were found dead in flocks from Shushtar. Rafyi and Ramyar reported that the naturally affected sheep with sheep pox has high protection against CE [16]. In addition, Capripox virus has closely serological relationship with CE virus [14]. The goat pox vaccine injected with high dose to all of the animals in three flocks. Three days after vaccination, no new cases were seen also the sick animals recovered rapidly. The cured animals are solidly immune for 2-3 years after the vaccination. However, the ewes vaccinated four weeks prior to parturition transferred CE antibody to lambs via colostrums. This study showed that the disease was commonest in the lambs 3-6 months of age although the lamb 10-12 days of age and sensitive adult sheep and goat also be severely affected. The prevalence was high range in this region (38.2 %), also the goat pox vaccine can cure the CE in lambs, sheep and kids. This outbreak occurred in the summer (between May to July), that there is no green grass in the pasture of province in summer. These animals graze on dry barley and wheat-straw after harvesting so dry grass causes aberration on the lips of the animal that is the main portal entry for infection.

Table. Numbers and data of used animals herd in Khuzestan province, Iran.

District	Date of seen the outbreak	Number of animals	Number of animals with positive clinical signs	Number of dead animals	Morbidity rate	Mortality rate	Fatality rate
The city of Ahwaz (Daghaghele village)	15 MAY 2008	540 (lambs) 7 (kids)	56 (lambs)	14 (lambs)	10.2 %	2.4 %	23.2 %
The city of Shushtar (Shahid Sherafat village)	2 MAY 2008	20 (goat) 150 (kids) 330 (lambs) 100 (sheep)	130 (kids) 360 (lambs)	1 (goat) 1 (kid) 3 (ewe) 3 (sheep)	82 %	1.3 %	1.6 %
The city of Behbahan (Kurdistan Olia village)	17 MAY 2008	300 (sheep) 34 (goat)	20 (sheep)	6 (sheep)	6 %	1.8 %	30 %

In recent years because of the droughtness and not available vaccine, the morbidity and mortality rate highly increased in sheep flocks and it becomes as a real economic herds problem in Khuzestan province. This field trial tested the usage of goat pox vaccine at CE outbreaks in the affected herds. Before Rafyi and Ramyar also reported that the affected sheep with sheep pox highly protected against CE, but the results of H. W. Renshaw and Agnes G. Dodd indicated that CE and goat pox isolated from the western United States are anti genetically dissimilar and could not be used as a method of inducing immunity to the other [13, 16]. This experimental field trial showed that injection of high dosage of goat pox vaccine also could cure sick animals rapidly (3 to 4 days) and not any search has done in this sheer size. This vaccination doesn't cause any local lesion at the site of injection and has not any systemic changes. It is against the reported study by M.M.I

Chowdhury et al [14]. The goat pox vaccine is too potent, safe and can recommend it to FAO and OIE as a new method of controlling and treating of CE by goat pox vaccine if there will be a viral antigenic relationship in the areas. This experimental field trial proved that there should be some close relationship between the antigens of goat-pox and CE viruses in this province. After 3-5 days, the infected animals rapidly cured without using any drugs and spread of disease also stop in the vaccinated herds. Therefore, it declares that the Razi-institute goat pox vaccine can prevent and treat the contagious ecthyma disease in infected animals in Khuzestan province herds. The cured animals after vaccination are solidly immune for 2-3 years after the vaccination, however, the ewes vaccinated 4 weeks prior to parturition transferred CE antibody to lambs via colostrum and they are protected from CE, it is similar to the reported by Buddle & Pulford [17].

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