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RA Bhat

Division of Veterinary Clinical Complex,
Faculty of Veterinary Sciences & Animal
Husbandry, SKUAST-K, Shuhama, Jammu
and Kashmir, India

A Muhee

Division of Veterinary Clinical Complex,
Faculty of Veterinary Sciences & Animal
Husbandry, SKUAST-K, Shuhama, Jammu
and Kashmir, India

MI Yattoo

Division of Veterinary Clinical Complex,
Faculty of Veterinary Sciences & Animal
Husbandry, SKUAST-K, Shuhama, Jammu
and Kashmir, India

S Taifa

Division of Veterinary Clinical Complex,
Faculty of Veterinary Sciences & Animal
Husbandry, SKUAST-K, Shuhama, Jammu
and Kashmir, India

OR Parrray

Division of Veterinary Clinical Complex,
Faculty of Veterinary Sciences & Animal
Husbandry, SKUAST-K, Shuhama, Jammu
and Kashmir, India

M Nisar

Division of Veterinary Clinical Complex,
Faculty of Veterinary Sciences & Animal
Husbandry, SKUAST-K, Shuhama, Jammu
and Kashmir, India

F Rehman

Division of Veterinary Clinical Complex,
Faculty of Veterinary Sciences & Animal
Husbandry, SKUAST-K, Shuhama, Jammu
and Kashmir, India

S Akhter

Division of Veterinary Clinical Complex,
Faculty of Veterinary Sciences & Animal
Husbandry, SKUAST-K, Shuhama, Jammu
and Kashmir, India

S Nisa

Division of Veterinary Clinical Complex,
Faculty of Veterinary Sciences & Animal
Husbandry, SKUAST-K, Shuhama, Jammu
and Kashmir, India

F ul Haq

Division of Veterinary Clinical Complex,
Faculty of Veterinary Sciences & Animal
Husbandry, SKUAST-K, Shuhama, Jammu
and Kashmir, India

S Singh

Division of Veterinary Clinical Complex,
Faculty of Veterinary Sciences & Animal
Husbandry, SKUAST-K, Shuhama, Jammu
and Kashmir, India

SA Malik

Division of Veterinary Clinical Complex,
Faculty of Veterinary Sciences & Animal
Husbandry, SKUAST-K, Shuhama, Jammu
and Kashmir, India

Corresponding Author:**RA Bhat**

Division of Veterinary Clinical Complex,
Faculty of Veterinary Sciences & Animal
Husbandry, SKUAST-K, Shuhama, Jammu
and Kashmir, India

Therapeutic management of cutaneous bovine papillomatosis using levamisole and lithium antimony thiomalate in cattle

RA Bhat, A Muhee, MI Yattoo, S Taifa, OR Parrray, M Nisar, F Rehman, S Akhter, S Nisa, F ul Haq, S Singh and SA Malik

Abstract

Papillomatosis in cattle is a viral disease characterised clinically by the development of multiple benign tumours which are termed as warts. Twelve cows in the age group of 3-9 years were selected for the present study. The animals were having growths on muzzle, teats and some other parts of body. On careful examination they were pedunculated or sessile growths which were diagnosed as cutaneous papilloma/warts on the basis of clinical lesions and histopathology. All the recorded physiological parameters were found to be normal. Nine cows were treated with Lithium Antimony Thiomalate out of which 5 cows recovered completely and 3 cows were treated with auto-haemotherapy out of which only 1 recovered. The six non-recovered animals were later treated with Lithium Antimony Thiomalate + Levamisole and among these 5 animals showed recovery. It was hence concluded that Levamisole + Lithium Antimony Thiomalate showed better efficacy than Lithium Antimony Thiomalate alone.

Keywords: Bovine papillomatosis, warts, Levamisole

Introduction

In all the animal species including man, papilloma or warts have a global distribution. Cutaneous bovine papillomatosis is a contagious neoplastic viral disease of animals characterized by the presence of multiple skin tumours or growths commonly on head, eyelids, ears, neck, dewlap, brisket, shoulders, legs, back, para-genital region, along the lower line of the abdomen, teats and udders [1, 2]. Among hundreds of papillomavirus types identified in humans, only ten bovine papillomavirus types (BPV-1 to -10) are recognized [3, 4, 5, 6]. Most types of bovine papillomavirus cause cutaneous form of papillomatosis (BPV1-3 and BPV5-10), whereas BPV4 causes tumours of the upper gastrointestinal tract in animals [7]. BPV1 and BPV2 (genus delta) predominantly infect the fibroblasts of the underlying dermis and cause fibropapillomas of the skin, teats and udders and urinary bladder cancer in the cattle fed bracken fern [7]. Different methods have been documented for the treatment of these cases viz., cauterisation, excision, cryotherapy, administration of local anaesthesia, autologous or heterologous vaccination, and autohaemotherapy or use of some drugs. Keeping in view of above facts the present paper was drafted to frame the proper management for the bovine papillomas.

Materials and Methods

Twelve cows with the age ranging from 3-9 years were selected for the present study. Six cases were presented to the Veterinary Clinical Complex, FVSc and AH, Shuhama, 4 cases were seen in the adjoining areas of district Ganderbal and two in the Shalimar area of district Srinagar. The animals were having growths on teats, body and muzzle areas. On clinically examining the animals, multiple pedunculated or sessile growths were seen and all the recorded physiological parameters were found to be normal. Papillomas on teats resulted in difficulties in milking. On the basis of the clinical lesions and histopathology they were diagnosed as cutaneous papilloma /warts. The treatment protocol adopted was given as shown in the Table 1. The animals in the Group 1 and Group 2 refractory for the treatment were placed in Group 3 and subjected for the treatment protocol as mentioned in the Table 1.

Table 1: Treatment protocol

| Groups | No. of animals | Treatment | Protocol |
|---------|----------------|---|--|
| Group 1 | 9 | <i>Lithium Antimony Thiomalate</i> | 15 ml deep intramuscularly on alternate days, six times or till complete recovery |
| Group 2 | 3 | Auto- haemotherapy | Venous blood drawn @ 15 ml from the Jugular vein by using 18G hypodermic needle in a disposable syringe in which 7.5 ml was injected subcutaneously in the lateral neck region and 7.5 ml was injected deep intramuscularly in the gluteal region by taking all sterile precautions. The treatment was repeated once in a week for four weeks continuously. |
| Group 3 | 6 | <i>Lithium Antimony Thiomalate</i> + levamisole | 15 ml of <i>Lithium Antimony Thiomalate</i> was given deep intramuscularly on alternate days. Levamisole at a dose of 2.5 mg/kg/day on days 1,3,5,7,9 and 16 by subcutaneously |

Results and Discussion

In the Group 1 treated with Lithium Antimony Thiomalate, 5 animals recovered completely and 4 animals did not show any response to the treatment even after the administration of 4th dose. The present study undoubtedly seems to be showing less efficacy of Lithium Antimony Thiomalate as compared to the findings of Kavithaa *et al.*, (2014) who reported that anthiomaline was effective in treating 81% papilloma cases in Jersey cattle^[8]. It may be due to the fact that some warts were sessile. In the Group 2 treated with Auto-haemotherapy only 1 recovered and 2 did not show any response. By the end of third week all the papilloma growths were completely reduced and only light black coloured scars were seen at the sight of the growth. Halil *et al.* (2003) treated bovine papilloma with a combination of autohemotherapy and autogenous vaccine within a period of 1.5-2 months^[9]. Hegde (2011) and Nehru (2015) reported successful treatment with auto-hemotherapy alone after 6 weeks^[10, 11].

Among the six animals in Group 3 (four from Group 1 and two from Group 2) treated with Lithium Antimony Thiomalate + levamisole, only five showed complete recovery. As stated by Sinha *et al.*, 2015, some authors have shown no efficacy of levamisole as monotherapy and now used in combination^[12]. Levamisole is an immunomodulator which can be used viral infections such as warts as it modifies polymorphonuclear leukocyte chemotactic responsiveness^[13]. It has got a wide range of immunomodulatory properties and mainly acts on macrophages and T-lymphocytes enhancing their functions like phagocytosis, chemotaxis, E-rosette formation, intracellular killing, adherence, delayed skin hypersensitivity and antigen-induced proliferation^[14].

Conclusion

In case of sessile warts Levamisole + Lithium Antimony Thiomalate shows better efficacy than Lithium Antimony Thiomalate alone so we should treat Cutaneous Bovine Papillomatosis with this combination

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