

Cutaneous Bovine Papillomatosis (Warts) Treatment Outcome Using Ivermectin: A Case of Crossbred Heifer and Calf

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Abstract

Cutaneous bovine papillomatosis is a contagious neoplastic viral disease of animals characterized by the presence of multiple skin tumors or growths, principally on the head part. Although they regress spontaneously, the furtherance to the malignant form may necessitate culling or slaughtering of the animal which is problematic and of economic significance, hence intervention is indispensable. A crossbred heifer of around one year and calf of around 4-month old were examined with abundant and various sizes of warts principally on their faces. Based on the history and clinical pictures, the cases were diagnosed as bovine cutaneous papillomatosis. The animals were treated with ivermectin after mass warts removed by excision. Warts vanished completely after a follow-up period of two months. Therefore ivermectin can be used as a treatment of choice for bovine papillomatosis.

Keywords: Calf; Heifer ivermectin; Cutaneous papillomatosis

Introduction

The Bovine papillomatosis is an infectious, contagious and neoplastic disease, characterized by the presence of multiple benign tumors (papillomas) that can regress spontaneously or progress to malignant neoplasms [1]. It is instigated by oncogenic Bovine papillomaviruses (BPV) which are non-enveloped icosahedral viruses, 50-55 nm in diameter, with a circular, double-stranded DNA genome, ranging from 7.4 to 8.6 kb. The viruses have a tropism to both cutaneous and mucosal epithelia of cattle and water buffalo. There are 13 types of BPV reported so far [1-3]. They are strictly species-specific except the infection of horses and other equids by BPV type 1 (BPV-1) or BPV type-2 (BPV-2) [4]. BPV can be found worldwide and its dispersion can occur via direct or indirect contact between infected animals or through contact with contaminated areas such as milking machines, water dispensers, feeders, ropes or fences or transmitted by insects [5]. It can be exhibited as benign nodular lesions, finger-like projections or cauliflower-like small growths on the skin arising from stratified squamous epithelium that may appear solitary or in multiples. The common sites for the development of cutaneous warts are head, eyelids, ears, neck, dewlap, brisket, shoulders and legs, occasionally on the back, para-genital region and along the lower line of the abdomen [6]. Although the papillomas regress as a result of a cell-mediated immune response, in some animals they may succumb to widespread cutaneous or mucosal involvement and further, it results in cancers which are problematic and of economic significance [7].

Different treatment options were tried in clinically affirmative cases of cutaneous warts by Jana [8]. Auto-haemotherapy or self-blood therapy alone and along with Levamisole brought about 90% and 100% recovery after fourth administration, respectively. Levamisole at a dose of 2.5 mg/kg/day on days 1,3,5,7,9 and 16 by oral and parenteral route obtained 82% and 88% recovery, respectively. A Single shot subcutaneous administration of Ivermectin resulted in complete recovery in 70% cases and 86.67% was achieved in double shot.

Similarly, the current case report describes successful treatment of cutaneous bovine papillomatosis using ivermectin in two cattle.

Case Description

A crossbred heifer of around one year and calf of around 4-months old were examined at Gerbicha peasant association, Ada'a in one of smallholder dairy farm on November 11, 2017. The major complaint of the owner was the appearance of growths on the face and other body parts of the heifer which has been elapsed four months. The heifer was brought to Addis Ababa College Veterinary Medicine, Veterinary Teaching Hospital, Bishoftu and treated with an unknown drug but not responded. After few months the same condition was started to erode on the body of the calf. The animals were managed intensively. Upon physical examinations; the temperature, heart rate and respiratory rate were within the normal range. There was wart like multiple nodular lesions on the face of the heifer and calf (Figure 1); in addition, a few but similar lesions were also seen on the neck and other body parts of the patients (Figure 1D). The lesions were old and active on the heifer were the older one started to drop off but new and active lesions started to explode. Based on history and the typical clinical findings it has been concluded tentatively as Bovine cutaneous papillomatosis or wart.



Figure 1: Bovine cutaneous papillomatosis covering the faces of heifer (A-C) and calf (D).

Case Management and Treatment Outcome

Both patients were treated with ivermectin at a dose of 0.2 mg/kg body weight twice with two weeks interval subcutaneously after larger sized and older nodules were removed by manual excision and topical antiseptic application. Two months post-treatment, both cases were fully recovered (Figure 2).



Figure 2: Two months post-treatment recovery from cutaneous papillomatosis.

Discussion

The present cases of a heifer and calf were diagnosed as cutaneous bovine papillomatosis based on the typical clinical picture and the contagiousness nature of the agent. Most types of bovine papillomavirus cause cutaneous form of papillomatosis (BPV1-3 and BPV5-10), whereas BPV4 causes tumors of the upper gastrointestinal tract in animals feeding bracken fern [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]. The benign lesions generally regress as a result of a cellular immune response, which

appears to protect against re-infection with that type but may also occasionally persist, leading to a high risk of evolving into cancer or even widely spread, particularly in the presence of environmental carcinogenic co-factors. In addition, BPV may persist as latent infection and become reactivated by immunosuppression and/or physical trauma. Accordingly the furtherance may necessitate culling or slaughtering of the animal which is problematic and of economic significance (through interfering with animal sales) [9], hence intervention is indispensable [4].

Previously, bovine papillomatosis are treated with removal of warts mass by surgical excision or ligation but this cannot bring favorable results alone [10]. In the current instances however, both the cases were treated with parenteral ivermectin (at 1 ml/50 kg body weight twice with two-week interval) after large size nodules were removed by manual excision with remarkable upshot two months post-treatment; which were in accordance with [6,11] reports which were used, similar protocol and shown 88% and 100% recovery within 3 months observation period, respectively.

Conclusion

Cutaneous papillomatosis is a contagious disease of bovine characterized by wart lesion on the skin of the animals, particularly on the faces. Although regress spontaneously, some cases may extended to malignant form and necessitate culling or slaughtering of the animal which is problematic and of economic significance. Hence, ivermectin can be used as a treatment of choice for bovine papillomatosis.

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