

Short Communication



Comparative Therapeutic Evaluation of Partial Excision of Lesions and Administering Autogenous Vaccine along with Immune-Modulators for the Treatment of Bovine Papillomatosis

Muhammad Arif Zafar¹, Murtaz-ul-Hasan^{1*}, Aayesha Riaz¹, Asim Shamim², Muhammad Farooq Iqbal¹ and Arfan Yousaf¹

¹Faculty of Veterinary and Animal Sciences, Pir Mehr Ali Shah-Arid Agriculture University, Rawalpindi, Pakistan; ²Faculty of Veterinary and Animal Sciences, The University of Poonch, Rawalkot, Azad Jammu and Kashmir, Pakistan.

Abstract | This study was conducted to evaluate therapeutic value of autogenous vaccine along with immune-modulators and to compare its efficacy with autogenous vaccine alone and partial excision of the lesions. To this end, nine animals were selected clinical and sporadic papillomas different body parts. These animals were divided into three groups; Group A animals were operated for partial excision of the lesions, Group B were inoculated with autogenous vaccine alone and Group C were treated with inoculation of autogenous vaccine supplemented with immune-modulators (Levamisole and Vitamin E+Selenium). The animals treated with autogenous vaccine along with immune-modulators showed complete regression of the papillomas compared animals, which were treated with autogenous vaccine alone. The partial excision of the papillomas showed no obvious differences. In conclusion, autogenous vaccine synergistically affected the immune-modulators (Levamisole and Vitamin E + Selenium) in complete regression of the papillomas. It is effective to use autogenous vaccine along with immune-modulators to revert the papillomas completely.

Editor | Muhammad Abubakar, National Veterinary Laboratories, Park Road, Islamabad, Pakistan.

Received | November 29, 2015; **Accepted** | November 30, 2015; **Published** | December 12, 2015

***Correspondence** | Murtaz-ul-Hasan, Faculty of Veterinary and Animal Sciences, Pir Mehr Ali Shah-Arid Agriculture University, Rawalpindi, Pakistan; **E-mail** | murtazhassan@yahoo.com

Citation | Zafar, M. A., M. Hasan, A. Riaz, A. Shamim, M. F. Iqbal and A. Yousaf. 2015. Comparative therapeutic evaluation of partial excision of lesions and administering autogenous vaccine along with immune-modulators for the treatment of bovine papillomatosis. *Veterinary Sciences: Research and Reviews*, 1(1): 6-9.

DOI | <http://dx.doi.org/10.17582/journal.vsr/2015.1.1.6.9>

Introduction

Bovine cutaneous papillomatosis, also called “cattle warts”, is a virus-induced tumor caused by papilloma virus of the family *Papovaviridae*. It is the skin affecting disease that can affect a variety of animal species. In bovines, warts chiefly occur in calves and heifers of age less than 2 years. Papillomas are characterized clinically by solid outgrowths of epidermis, which vary greatly from small pedunculated nodules to a cauliflower like large confluent and pedunculous growth. These tumours usually range in size from

1 to 10 cm, however, larger sizes may exist (Atwell and Summers 1977). The condition may affect 1 to 2 calves in a herd, but occasionally it may become a herd problem (Scenyonga et al 1990). Depending upon affected body parts, papillomas may be present on head, especially the region about the eyes is most frequently involved, but they may appear on the sides of neck and less commonly on after body parts.

Various approaches have been employed for the treatment including total excision of the warts, however, this is only possible in animals having a few warts.

Often warts are multiple which preclude the use of surgery as a treatment intervention. In this situation, partial excision of one to two papillomas is performed to induce the clearance of remaining lesions or autogenous vaccine only or a combination of partial excision and autogenous vaccine are conducted. This study was aimed to evaluate comparative therapeutic effects of partial excision of papillomas, administration of autogenous vaccine alone and in combination with immune-modulators (Levamisole and Vitamin E+Selenium).

Materials and Methods

Animals: A total of nine cases of bovine papillomatosis were selected and included in the treatment regime in this study. Three cases of severe bovine papillomatosis occurred on a local Livestock Farm (please include the name of livestock form and city, country). These cases were registered in a 10 to 15-months-old cross-bred heifers suffering from severe generalized papillomatosis with multiple papillomas, from 10 to 20 mm in diameter, disseminated on the ears, head, shoulders and perigenitaly. Other six cases were described at the Veterinary Teaching Hospital, Department of Clinical Medicine & Surgery, University of Agriculture, Faisalabad, Pakistan at different intervals. The age of these animals was 12 to 20 months. In these animals, papillomas were small (6 to 10 mm in diameter) and pedunculated. Animals were handled according to guidelines established by the Animal Ethics Committee, University of Agriculture, Faisalabad, Pakistan.

Diagnosis: The diagnosis of bovine papillomatosis was basis on the presented clinical signs, since the structure of the papillomas on the skin can easily be observed and identified.

Treatment protocol: The animals were allotted to three groups (group A, group B and group C) having three animals in each, according to papilloma size, so that there was close similarity within three groups. Treatment protocol for all three groups was as under: Group A: Two to three papillomas were partially excised at the time of presentation.

- Group B: These animals were inoculated with 4 shots of 20 ml autogenous vaccine subcutaneously (SC) repeated after 07 days.
- Group C: Animals in this group were treated as that of Group B. Additionally, these animals were

also treated with immune-modulators: Levamisole hydrochloride @3 mg/kg, orally for three consecutive days and 10 ml of Vitamin E+Selenium (Farvet, Holland) through intramuscular route.

Autogenous vaccine was prepared according to protocol reported previously by [Pearson et al. \(1958\)](#) and [Amstutz \(1978\)](#). Briefly, 5 g of fresh active growth of papillomas was removed. Tissue was cut into small pieces, homogenized in 50% glycerol-saline solution (30 mL/g of tissue), and the mixture was filtered through a muslin cloth. A small quantity of penicillin (200,000 IU of procaine penicillin) and streptomycin (250 mg of dihydrostreptomycin sulfate) was added to prevent bacterial growth; 0.3% formalin was added to inactivate the virus. The vaccine was stored in refrigerator until used.

Results

By the end of 5 weeks; papillomas in group A were not properly regressed and there was no observable difference in their size. Animals in group B showed regression of the warts with respect to their size. The reduction in size was almost 50% than the original at the time of presentation. Animals in group C showed almost complete regression of the papillomas. After 12 weeks of applying respective treatment protocols, group A showed no regression proving that partial excision of the papillomas is of no use, regression of papillomas in group B was more than 70% indicating that it has better results while in group C all warts spontaneously disappeared and animals completely recovered. No recurrence of papillomas has been observed in cattle of group C.

Discussion

Although bovine papillomatosis is a self-limiting disease, it mostly occurs in individuals which are immune-compromised ([Lutzner 1985](#)). In humans, generalized warts have been observed in patients with inherited immunodeficiency ([Inayat et al 1999](#)). Reports of bovine papillomatosis treatment with vaccine produced from formalinized suspension of wart tissue indicate variable results. There are many reports indicating that treatment of bovine papillomatosis with autogenous vaccine showed more than 95% recovery ([Lesnik et al 1999](#); [Suvegas 2003](#)) but our results slightly were deviated from these reports and showed 70% recovery. On the contrary, treatment

with autogenous wart vaccine sometimes failed (Scott and Adderson 1990) but our observations showed partial recovery. It has been reported that use of immune-activator along with autogenous vaccine also showed good recovery (Inayat et al 1999; Turk et al 2005). This study was also focused on the effect of autogenous vaccine along with immune-activators and proved good recovery agreeing with these studies.

Levamisole has been reported to enhance immune response to viral antigens (Babuik and Misra 1981). It increases the antibody response to vaccination through cell-mediated response (Giambrone and Klesius 1985). Per oral Levamisole treatment in mice showed an enhanced production of interleukin-1 (IL-1) in isolated peritoneal macrophages (Vojtic 1998). Its greatest immune-stimulating effect has been observed in immunosuppressed animals (Brunner and Muscoplat 1980). Vitamin E+Selenium, both dietary and injectable, have been reported to enhance antibody titers (Blodgett et al 1986; Qureshi 1994). Deficiencies of Vitamin E+Selenium can suppress components of immune system (Boyne and Arthur 1979).

Our results indicate the efficacy of bovine papillomatosis treatment with the autogenous vaccine and immunity inducer in the manner of earlier regression of papillomas. The animals of group A showed no obvious difference as previously reported by Ssenyonga (1990) but papillomas were regressed but incompletely in the animals of group B after 12 weeks while earlier regression was seen in animals treated with autogenous vaccine and immune-modulators (Inayat et al 1999; Turk et al 2005). These results indicate the efficacy of combination of autogenous vaccine and immune-activators (Levamisole HCl, Vitamin E+Selenium).

Conclusion

It was deduced from the data that only partial excision of papillomas is of no therapeutic value while administration of autogenous vaccine along with immune-modulators (Levamisole HCl, Vitamin E+Selenium) showed synergistic effect in the regression of papillomas.

References

- Amstutz HE. Treatment of warts in cattle. *Modern Veterinary Practice* 59, 650, 1978

- Atwell RB, Summers PM. Congenital papilloma in a foal. *Australian Veterinary Journal* 53, 299, 1977
- Babuik LA, Misra V. Levamisole and bovine immunity: *in vitro* and *in vivo* effects on immune response to herpes virus immunization. *Canadian Journal of Microbiology* 27, 1312-19, 1981
- Blodgett DJ, Schuring GG, Kornegay ET. Immunomodulation in weanling swine with dietary selenium. *American Journal of Veterinary Research* 47, 1517, 1986
- Boyne R, Arthur JR. Alterations of neutrophil function in selenium deficient cattle. *Journal of Comparative Pathology* 89, 51, 1979
- Brunner CJ, Muscoplat CC. Immunomodulation effects of levamisole. *Journal of American Veterinary Medical Association* 178, 1159-62, 1980
- Giambrone JJ, Klesius PH. Effects of levamisole on the response of broilers to coccidiosis on vaccination. *Poultry Science* 64, 1083, 1985
- Inayat A, Muhammad G, Asi MN, Saqib M, Athar M. Use of autogenous vaccine for the treatment of generalized papillomatosis in cattle. *Pakistan Veterinary Journal* 19, 102-3, 1999
- Lesnik F, Bires J, Suli J, Posivak J, Mattova J, Svrcek S, Sevcikova Z, Kvakacka V, Gaspar V, Levkut M, Buleca J. Autovaccination and metabolic profiles at bovine papillomatosis. *Slovak Veterinary Journal* 24, 290-94, 1999
- Lutzner MA. Papilloma virus lesion in immunodepression and immunosuppression. *Clinical Dermatology* 3, 165-69, 1985
- Pearson JKL, Kerr WR, McCartney WDJ. Tissue vaccine in the treatment of bovine papillomas. *Veterinary Record* 70, 971-73, 1958
- Qureshi ZI. Effect of immunopotention during last trimester of pregnancy on haematological and immunological response in buffaloes. *PhD thesis*, University of Agriculture, Faisalabad, Pakistan, 1994
- Scott DW, Anderson WI. Bovine cutaneous neoplasm: literature review and retrospective analysis of 62 cases (1978-1990). *Compendium Continuing Education* 14, 1405-16, 1992
- Ssenyonga GSZ, Onapito JS, Nakasala-Situma J, Omara-Opyene AM. Therapeutic value of partial excision of lesions combined with administration of an autogenous vaccine during an episode of cutaneous papillomatosis in cattle of Uganda. *Journal of American Veterinary Medical Association* 197, 739-38, 1990

- Suveges T, Schmidt J. Newer data on the occurrence in Hungary of losses caused by and ways of control of bovine papillomatosis. *Magy Allatorvosok* 83, 2003
- Turk N, Zupancic Z, Staresina V, Kovac S, Babic T, Kreszinger M, Curic S, Barbic L, Milas Z. Severe bovine papillomatosis: detection of bovine papillomavirus in tumour tissue and efficacy of treatment using autogenous vaccine and paraimmunity inducer. *Veternarski Arhiv* 75, 391-97, 2005.
- Vojtic I. Levamisole-caused association between neutrophil and eosinophil granulocytes in dairy cows after parturition. *Veternarski Arhiv* 68, 135-42, 1998.