

## USE OF AUTOGENOUS VACCINE FOR THE TREATMENT OF GENERALIZED PAPILLOMATOSIS IN CATTLE

A. Inayat, G. Muhammed, M. N. Asi, M. Saqib and M. Athar  
*Department of Clinical Medicine and Surgery, Faculty of Veterinary Science,  
 University of Agriculture, Faisalabad-38040, Pakistan.*

### INTRODUCTION

Cutaneous papillomatosis also called warts is a viral disease caused by papilloma virus of the Family *Papovaviridae* in a variety of animals. It is characterized clinically by solid outgrowths of epidermis which may be sessile or pedunculated. These range from 1-10 cm and have a dry, horny, and cauliflower-like appearance. When only a few warts are present on the body, these can be excised surgically. Often the warts are so multiple as to preclude the use of surgery as a treatment intervention. The use of antimony salts (e.g. Lithium antimony thiomalate; Anthiomaline™, May & Baker Ltd., UK) and autogenous vaccine (Radostits *et al.*, 1994) has been advocated for the treatment of multiple disseminated warts. Anthiomaline is no longer available in Pakistan leaving autogenous vaccine the only option for the treatment of disseminated multiple bovine papillomatosis. In addition some cattle suffering from papillomatosis are refractory to anthiomaline treatment (Wadhwa *et al.*, 1995). The present paper, describes the successful use of autogenously prepared vaccine (prepared from the affected tissues of the same animal) in the treatment of disseminated multiple warts in two crossbred heifers.

### Case Histories, Clinical Findings, Diagnosis and Treatment

#### Case No. 1

A crossbred heifer, aged approximately one and half year was brought to the outdoor clinics of Deptt. of Clinical Medicine and Surgery, University of Agriculture Faisalabad in May, 1998. The animal had multiple solid outgrowths ranging from 5-8 cm. The outgrowths were rounded, clubshaped, and finger-like. They were present mainly on the neck and shoulder regions. Vital parameters (temperature, pulse, respiration rates etc.) of health were within their normal ranges. On the basis of characteristics clinical signs (Radostits *et al.*, 1994), a diagnosis of papillomatosis was established. For the treatment, 15 mL of an autogenously prepared vaccine was

administered S.C. twice at one week interval. The preparation of this vaccine proceeded as per the methods of Pearson *et al.* (1958), Amstutz (1978) and Wadhwa *et al.* (1995) described here under:

Five grams of fresh active growth 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 muslin cloth. Antibiotics (2,00,000 IU of Procaine Penicillin and 250 mg of Dihydrostreptomycin sulfate) were added to prevent bacterial growth. Formalin 0.4 mL per 100 mL of filtrate was added to inactivate the virus and then kept in refrigerator for 24 hours. The animal recovered after one and a half month of initiation of treatment.

#### Case No. 2

A crossbred heifer aged approximately two years was brought to the outdoor clinics of the Deptt. of Clinical Medicine and Surgery, University of Agriculture Faisalabad in July, 1998 for the treatment of warts. The animal had been suffering from the condition for the last one month. The heifer was pregnant for three months.

On the first visit the vital parameters were as follows: Temperature 105.6°F, pulse rate 92/min., respiration rate 48/min. The lesions present on the body of the animal were circular to elongated, rough, dry, horny, sessile and projecting like towel surface. They were extensive on the both sides of the neck, poll, around the eyes, face, around the vulva, anus, and tail. There were also a few lesions on the chest, abdomen, and medial sides of the thighs and axillary region. On the basis of characteristic clinical signs, (Radostits *et al.*, 1994) a diagnosis of bovine papillomatosis was made. The treatment instituted on the first-visit consisted of:

- 1) Hosing of the animal with cold water to lower the body temperature.
- 2) Oxytetracycline hydrochloride (50 mg/mL), 30 mL I.M. × 3 days to treat secondary bacterial infection which caused fever.
- 3) Vitamin E and selenium (Farvet, Holland) 10 mL IM for immunostimulation.
- 4) Subcutaneous administration of 15mL of autogenous vaccine which was prepared essentially by the same method as described under

case No.1 except that distilled water replaced glycerol-saline.

After one week on second visit all the clinical parameters were within the normal range and a regressing trend in the warts was noticed. The treatment instituted on second visit consisted of:

- 1) Levamisole hydrochloride (1.5% w/v), 25 mL P.O. × 3 days for immunostimulation.
- 2) Vitamin E and selenium, (Farvet, Holland) 10 mL IM for immunostimulation.
- 3) Second shot of autogenous vaccine 15 mL SC.

The complete resolution of the warts took about one month from the start of treatment

## DISCUSSION

There is a significant relationship between the development of warts and immunity. The disease is mostly occurs in individuals which are immunocompromised (Lutzner, 1985), in humans generalized warts have been observed in patients with inherited immunodeficiency (Hausen, 1998). Both cases in the present study were treated with autogenous vaccine but the response of case No. 2 was better than case No. 1 as it recovered earlier even though it was more severely affected. The use of immunoactivators (Vit. E-selenium inj. and levamisole drench) along with autogenous vaccine may account for a shorter recovery period in case No.2. The recovery period of one and half month in case No. 1 and one month in case No. 2 is slightly longer than the corresponding time period of 20-25 days reported by Wadhwa *et al.* (1995) with 6 injections of autogenous vaccine. The longer recovery period in the present study than that reported by these workers may be attributed to 3 fold less frequent use of autogenous vaccine.

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). Peroral levamisole treatment in mice showed an enhanced production of Interleukin-1 (IL-1) in isolated peritoneal macrophages (Vojtic, 1998). Its greatest immunostimulating effect has been observed in immunosuppressed animals (Brunner and Muscoplat, 1980).

Vitamin E and selenium both dietary and injectable have been reported to enhance antibody titers (Blodgett *et al.*, 1986; Qureshi, 1994). Deficiencies of Vitamin E and selenium can suppress components of immune system (Boyne and Arthur, 1979).

The other difference in the treatment of two cases in the present study relate to nature of diluent used for preparation of autogenous vaccine. Glycerol-saline as recommended by Pearson *et al.* (1958) and Amstutz (1978) was used in case No.1 whereas, in case No.2

distilled water replaced glycerol-saline. All the same vaccine prepared by utilizing distilled water also affected a recovery. Indian worker (Wadhwa *et al.*, 1995) have reported a successful use of bovine papillomatosis autogenous vaccine prepared with saline solution as diluent. Therefore, under field conditions where glycerol-saline solution is not readily available, distilled water probably can be used in the preparation of autogenous papillomatosis vaccine for cattle.

## REFERENCES

- Amstutz, H.E., 1978. Treatment of warts in cattle. *Mod. Vet. Prac.*, 59: 650.
- Babuik, L. A. and V. Misra, 1981. Levamisole and bovine immunity: *in vitro* and *in vivo* effects on immune responses to herpes virus immunization. *Can. J. Microbiol.*, 27: 1312-1319.
- Blodgett, D. J., G. G. Schuring and E. T. Kornegay, 1986. Immunomodulation in weanling swine with dietary selenium. *Am. J. Vet. Res.*, 47: 1517.
- Boyne, R., and J. R. Arthur, 1979. Alterations of neutrophil function in selenium deficient cattle. *J. Comp. Pathol.*, 89: 51.
- Brunner, C. J., and C. C. Muscoplat, 1980. Immunomodulation effects of levamisole. *J. Am. Vet. Med. Assoc.*, 178: 1159-1162.
- Giambrone, J. J. and P.H. Klesius, 1985. Effect of levamisole on the response of broilers to coccidiosis on vaccination. *Poult. Sci.*, 64: 1083.
- Hausen, H. Eur., 1998. Papovaviruses. In: Topley and Wilson, *Microbiology and Microbial Infection*. Eds. Brain, W.J. Mahy and L. Collier (Eds). Vol. 1. Arnold, Amemlur of the Hodder Headline Group. London, NW1, 3BH. pp: 249-304.
- Lutzner, M. A, 1985. Papilloma viruses lesions in immunodepression and immunosuppression. *Clin. Dermatol.*, 3: 165-169.
- Qureshi, Z.I., 1994. Effect of immunopotention during last trimester of pregnancy on hematological and immunological response in buffaloes. Ph.D. Thesis Deptt. Of Animal Reproduction, University of Agriculture, Faisalabad, Pakistan.
- Pearson, J.K.L., W.R. Kerr and W.D.J. McCartney 1958. Tissue vaccines in the treatment of bovine papillomas. *Vet. Rec.*, 10: 971-973.
- Radostits, O.M., D.C. Blood and C.C. Gay, 1994. *Veterinary Medicine*. 8<sup>th</sup> Ed. Bailliere-Tindall, London. pp: 1127-1130.
- Vojtic, I., 1998. Levamisole-caused association between neutrophil and eosinophil granulocytes in dairy cows after parturition. *Veternarski Arhiv*, 68 : 135-142.
- Wadhwa, D.R., B. Parsad, V.N. Rao and M. Singh, 1995. Efficacy of auto-immunization in bovine cutaneous papillomatosis. *Indian Vet. J.*, 72: 971-972.