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A successful management of bovine papillomatosis with autogenous vaccine in cattle

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Autogenous Vaccine
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Abstract

Two cases of bovine papillomatosis were brought to the Department of veterinary surgery and radiology, CVSc, SVVU, Tirupati. It was diagnosed as bovine papillomas on clinical observations of the wart lesions. Wart samples were collected aseptically from one of the case.

An autogenous formalin killed vaccine was prepared from the collected wart samples. The formalin inactivated autogenous vaccine was adjuvented with equal volumes of aluminium hydroxide. After sterility check up the vaccine was administered to both the animals subcutaneously, cow @ 10ml and heifer calf 5ml on 0 day and then subsequently 10 days interval. The regression of the warts was started by three weeks of post vaccination and complete regression was appeared by sixth week in less severe case of heifer calf and in cow seventh week. The study represents successful management of bovine papillomas with a bovine specific autogenous vaccine. Further the autogenous vaccine prepared from one animal treated successfully to another animal.

Introduction

Papilloma viruses belong to family of Papillomaviridae affecting skin and mucosa of humans and animals. The virus normally infects epithelial cells causing benign hyper proliferative lesions (Warts, papillomas and fibro papillomas) which can progress to cancer (Campo, 2006). Bovine papillomatosis is a contagious disease of cattle occurring as warts/papilloma on skin and mucosa, caused by BPV types 1 to 10 (Vidhya *et al*, 2009).

Papilloma virus infection in cattle can result in weight loss and retarded growth. The lesions are often associated with the mammary gland and interfere with milking. It can lead to reduction in milk yield. The quality of the hide is also deteriorated. Thus the disease can lead to a serious economic loss if not diagnosed and treated promptly. A formalinized suspension of bovine warts with inactivated virus provides a vaccine for effective treatment and prophylaxis of bovine papillomatosis (Barthold et al 1976, Hunt 1984, Lesnik et al 1999, Suveges and Schmidt 2003). The present clinical study describes the use of autogenous vaccine in cattle as a successful managemental practice.

Materials and methods

Sample collection

Two animals crossbred heifer and adult cow were brought to the Department of veterinary surgery and radiology, CVSc, SVVU, Tirupati with a history of papillomas. On clinical examination small to big wart like lesions around the eyes, ears, nose, neck, shoulders, abdomen and udder varying in size from 0.5 to 50mm in diameter was observed. The lesions are characteristic varied from flat to pedunculated. The animals were apparently healthy. The case was tentatively diagnosed and the warts were collected for autogenous vaccine preparation. On clinical observation the case was suspected as bovine

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papillomatosis. Later from one animal warts were collected and processed for vaccine preparation.

Autogenous vaccine preparation

Wart lesions were collected from one of the animal (adult cow) aseptically in PBS on ice until processing according to the method described by Hunt (1984). The processing of warts were carried out with sterile scissors, washed thoroughly with sterile PBS and homogenated with sterile sand using pestle and motor. Later 10% suspension was made with sterile PBS. Then the suspension was centrifuged at 3000rpm at 4°C for 30min to remove the coarser particles. Supernatent was taken and formaline was added at a concentration of 0.5% to inactivate the virus. Vaccine thus prepared was added with equal volumes of aluminium hydroxide and left for 24 hours at 4°C for sterility check up of the vaccine samples were inoculated on blood agar, nutrient agar and macconkey agar at 37°C for 48 hours. For fungal check up the vaccine samples were inoculated on sabouraud dextrose agar media and kept in duplicates one at 37°C and another at 25°C for 3-7 days. After the sterility check up the same animals with papilloma warts were administered with the vaccine thus prepared.

Vaccine dose and administration

The adult animal was administered with 10ml of vaccine dose subcutaneously in the shoulder region and the heifer calf with 5ml subcutaneously similar manner. The second dose was given 10 days after the first dose. Then later third dose was given 10 days after the second dose and then subsequently fourth and fifth doses were given 10 days apart and observed for regression of warts.

Results

Initially the cases were diagnosed as papillomas based on clinical presentation and wart like lesions on different parts of the body (Fig.1 and 3). The papilloma lesions were started regression after third dose of post vaccination of animals and the complete regression was observed by sixth week of post vaccination in heifer calf of less severity of the case and by the seventh week in severely affected cow (Fig. 2 and 4).

Fig. 1: Papilloma case before autovaccination (Heifer calf)

Fig. 2: After autovaccination (heifer calf)

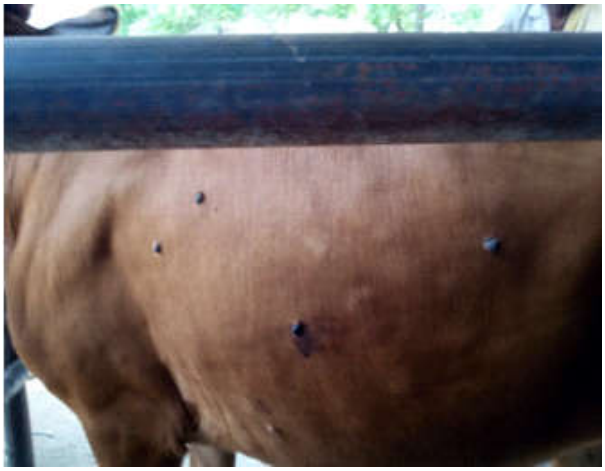

Fig. 3: Papilloma case before autovaccination (adult cow)

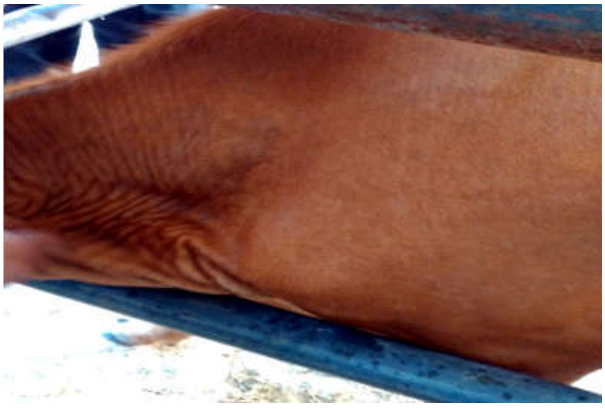

Fig. 4: After autovaccination (adult cow)

Discussion

The results of the present study showed the

successful recovery of the papillomatosis. of the two animals, the recovery in heifer calf by sixth week of post vaccination and cow by seventh week with species specific autogenous vaccine. Similar findings were reported by Hamad M.A. et al (2012), Thaiya et al (2009) and Suveges and Schmidt (2003). In the present study the autogenous vaccine prepared from cow resulted in complete recovery of not only the particular animal but also complete recovery of other heifer calf also. But Ndarathi and Mbuthia (1994) made an observation that a single wart sample from one calf was used to prepare the vaccine, thus prepared vaccine was failed to cure other infected animals. Further Campo (1999) and Campo (1997) also reported that Bovine papilloma viruses 1, 2 and 5 cause fibropapillomas and the vaccine prepared using all the three virus types results in successful treatment of Bovine papillomas. In the present cases the young animals were being affected and this inagreement with Radostits et al (1994) that older animals have been reported to be resistant to the infection and it could be due to immunity acquired from apparent and inapparent infections. Thaiya et al (2009) suggested that the wart samples should be collected from all infected ones and with those material common vaccine can be prepared for successful treatment of Bovine papillomas.

Further owners of the both the animals were advised for good managemental practices.

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