

THERAPEUTIC MANAGEMENT OF PAPILLOMATOSIS IN CATTLE

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SUMMARY

Bovine papillomatosis is a common viral disease of cattle caused by bovine papilloma virus. In this study, four clinical cases of papilloma in cattle of 1-3 years of age were presented to the Referral Veterinary Diagnostic and Extension Centre, Uchani, Karnal with history of cauliflower-like nodular growths on neck and growth spread throughout the body in two cases. Clinical examination revealed rectal temperature, respiration and pulse rates within the normal range. Haematological examination revealed significant rise in total leucocyte count with absolute neutrophilia and lymphocytopenia whereas serum biochemical findings showed significant hyperglycemia (pd^{0.01}). Grossly, the growths were gray, firm, cauliflower-like and nodular with broad base. Histopathological examination showed hyperkeratosis, parakeratosis, acanthosis and multiple fingers-like papillary projections with well-developed fibrous connective tissue core. Based on gross observations and histopathological characteristics, these were diagnosed as papilloma. All the cases were first treated with Inj. Vincristine intravenously at weekly interval for 2 weeks and Inj. Lithium antimony thiomalate intramuscularly, repeated at 48 h interval thrice. After treatment, animals showed slight recovery and few papillomatous growths sloughed off. These animals were then treated with Thuja-30 extract orally twice a day for 2 weeks along with autohaemotherapy at weekly interval for 3 weeks. All the animals recovered successfully after complete course of treatment.

Key words: Papilloma, Cattle, Thuja-30, Autohaemotherapy

Papillomatosis is a benign proliferative tumour of cutaneous and mucosal epithelia occurring in cattle, buffalo, goats, dogs, rabbits, horses and humans. Bovine papillomatosis is caused by bovine papillomavirus (BPV) which is double-stranded DNA virus of the family Papillomaviridae. In humans, hundreds of papillomavirus (PV) types have been described but only 14 BPV types have been recognized (Roperto *et al.*, 2016). Mostly young cattle are affected; up to 2 years of age, however, cattle of all ages can develop BPV lesions (Campo and Jarret, 1994). The lesions can occur anywhere on the body but are most commonly observed at neck, teat, head and shoulder (Hatama, 2012). Most warts are benign and do not proliferate indefinitely. In cattle, it can result in weight loss, retarded growth, reduction in milk yield, so, if not diagnosed and treated promptly, the disease can lead to a serious economic loss (Sreeparvathy *et al.*, 2011). The present study was carried out for successful therapeutic management of papillomatosis in cattle.

Four clinical cases of papillomatosis in cattle of 1-3 years of age were presented to RVDEC, LUVAS, Uchani, Karnal with history of cauliflower-like nodular

growths on neck in two cases and on the whole body in the remaining two cases.

Blood samples were collected aseptically with and without EDTA coated sterile vials from jugular vein of the affected animals for haematology and serum biochemical profiling. Various haematological parameters viz. haemoglobin (Hb), packed cell volume (PCV), total erythrocyte count (TEC), total leukocyte count (TLC) and differential leukocyte count (DLC) were estimated by using a blood cell counter (MS4se, HD consortium). Fully automated Clinical Chemistry Analyzer (EM Destiny 180™ Erba Mannheim–Germany) was used for the estimation of serum biochemical parameters (glucose, calcium, inorganic phosphorus) using kits procured from Transasia Biomedical Limited.

The biopsy samples were collected after administration of local anaesthesia around growths and fixed in 10% buffered formalin for histopathological examination. After proper fixation, tissues were processed routinely for histopathological study and stained with haematoxylin and eosin as per standard conventional procedure (Luna, 1968).

After presentation of the clinical cases, anamnesis revealed that animals were slightly anorectic; however,

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water intake, defecation and urination were normal. Physiological parameters like temperature, respiration and pulse rate were within the normal range

Clinical examination revealed rectal temperature, respiration and pulse rates within the normal range. Haematological examination revealed significantly higher values of TLC, neutrophils and lower values of lymphocytes indicating leucocytosis with absolute neutrophilia and lymphocytopenia in all four cases as compared to healthy control animals ($p < 0.01$) (Table 1). However no significant difference was observed in Hb, TEC, PCV, eosinophil and monocytes ($p < 0.05$). Serum biochemical profile revealed significantly higher level of glucose in affected animals in comparison to healthy ($p < 0.01$). Ca and P values in affected animals were in normal range (Table 1). Marked hyperglycemia may be associated with overstress in disease condition which leads to rise in cortisol level and decrease insulin sensitivity, leading to less utilization of glucose (Marik and Bellomo, 2013).

Grossly, the warts were grayish, firm, horny projected, cauliflower-like and nodular growths spread over neck, back and other parts of body (Fig. 1 & 2). On histopathological examination these revealed multiple fingers-like papillary projections with well-developed fibrous connective tissue core, parakeratosis and hyperkeratosis (Fig. 3). It also showed acanthosis and prominent keratohyaline granules (Fig. 4). Based on gross observations and histopathological characteristics, these were diagnosed as papilloma.

All the cases were first treated by Inj. Vincristine @ 0.025 mg/kg b.wt. Intravenously at weekly interval

for 2 weeks and Inj. Lithium antimony thiomalate (Anthiomaline®; each ml contains 60 mg of lithium antimony thiomalate) with a total dose of 20 ml intramuscularly, repeated at an interval of 48 h for three times. After this treatment, animals showed slight recovery and few papillomatous growths sloughed off. The animals were then treated with a homeopathic preparation i.e., Thuja-30 extract @ 5ml orally twice a day for 2 weeks along with autohaemotherapy at weekly interval for 3 weeks. In autohaemotherapy, treatment of clinically affected animals was done by injecting 20 ml blood withdrawn from the same animal @ 10 ml s/c on each side of the neck using all aseptic precautions. After this treatment, all the animals recovered successfully.

Bovine papillomatosis is a self-limiting disease in cattle. In the present investigation, animal affected were in the age group of one to three years which is in agreement with the previous studies (Claus *et al.*, 2009; Sreeparvathy *et al.*, 2011; Ozsoy *et al.*, 2011). Goldschmidt and Hendrick (2002) and Radostits *et al.* (2007) have earlier reported papilloma mainly on the head and neck and in some animals on the other parts of the body. Our study also stated that nodular growth was present on neck in all the cases and in two cases it spread to whole body. Previous studies (Goldschmidt and Hendrick, 2002) regarding macroscopic and microscopic findings supports the present observations. As the warts were large and widespread, surgical intervention was not adopted as it may aggravate the condition and may lead to formation of large wounds (Sreeparvathy *et al.*, 2011; Shakoore *et al.*, 2012). Thuja was also used by earlier workers for the treatment of cutaneous warts (Shakoore, *et al.*, 2012). Effective

Table 1
Haemato-biochemical parameters in healthy and diseased cattle.

Parameters	Diseased animals (n=4)	Control animals (n=10)	P value
Hb (g %)	9.87±0.40	11.09±0.383	0.075 ^{NS}
TEC ($\times 10^6/\mu\text{L}$)	7.3±0.67	7.06±0.18	0.603 ^{NS}
PCV (%)	31.45±1.39	32.8±1.13	0.486 ^{NS}
TLC($\times 10^3/\mu\text{L}$)	16.90±1.32	5.87±0.34	0.00001**
Neutrophils (%)	62.25±2.99	46.7±1.86	0.00022**
Lymphocytes (%)	31.75±5.08	50.4±1.93	0.0005**
Eosinophils (%)	2.25±0.55	1.5±0.23	0.128 ^{NS}
Monocyte (%)	1.25±0.72	1.4±0.233	0.776 ^{NS}
Haemoparasite	Negative	Negative	-
Glucose (mg %)	96.42±13.22	56.6±1.7	0.00014**
Calcium (mg %)	9.3±0.56	9.69±0.15	0.347 ^{NS}
Phosphorus (mg %)	4.9±0.16	4.64±0.13	0.266 ^{NS}

*= $p < 0.05$; **= $p < 0.01$; NS=Non-significant



Fig. 1. Extensive grayish horny projected and cauliflower-like growths on hump and scattered growths on neck and back region.



Fig. 2. Variable sized round nodular growths with broad base.

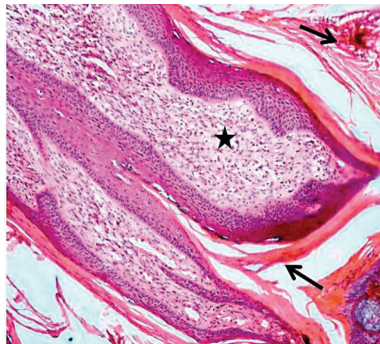


Fig. 3. Papilloma showing finger-like papillary projection with fibrous connective tissue core in centre (star) and surrounded by different layers of epidermal cells with hyperkeratosis on periphery (arrow). H&E×100

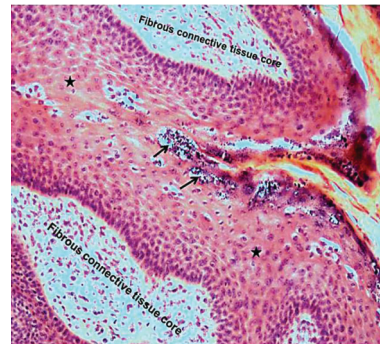


Fig. 4. Papilloma showing acanthosis (star), fibrous connective tissue cores and prominent keratohyaline granules. H&E×200

treatment of papilloma with autohaemotherapy has also been reported and supports our findings (Kavithaa *et al.*, 2014).

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