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BOVINE PAPILLOMA VIRUS (CATTLE WARTS): A CASE STUDIES

Fiza Tariq
Department of Veterinary Medicine, University of Veterinary and Animal Sciences, Lahore.

Syed Muhammad Ali Shah
Faculty of Veterinary and Animal Sciences, University of Poonch Rawalakot, syedmuhammadalishahg@gmail.com

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Abstract

Bovine papillomavirus (BPV) is a pathogen that causes serious clinical and economic importance for livestock owners. This leads to the depreciation of leather and even death if it develops into a tumor. Bovine papillomavirus infection in domestic animals, including cattle, birds, and wild animals, has been reported frequently. Bovine papillomavirus is also known as papilloma's or warts among veterinarians and farmers. Bovine papillomavirus is caused by papilloma virus which falls under the family of viruses classified as Papillomaviridae. Bovine papillomavirus is a highly contagious disease due to rapid horizontal animals to animal transmission. The virus gets released in the secretory fluids of infected animals. Thus, aerosols are the most common route of transmission of Bovine papillomavirus among animals. This clinical study is developed to provide an effective preventive regimen for BPV in preventing the deaths of animals and farmers. The patient presented with cauliflower-like warts on the neck region. After observing my clinic, a confirmed Bovine papillomavirus was noted. It was recorded that supportive treatment, along with preventing opportunistic and immunity boosters, proved to be the effective treatment for Bovine papillomavirus.

Keywords: *Veterinary Medicine, Cattle, Warts, Bovine Papilloma Virus and Cattle Warts.*

Introduction:

Papillomaviruses have been found in 54 different species of amniotes, including mammals, birds, and reptiles, indicating widespread infection (Rector & Van Ranst, 2013). The study of this category of viruses has historically been crucial in demonstrating the likelihood of a viral etiology for various neoplasms. Papillomavirus infection can result in neoplasms, such as human papillomavirus and cervical cancer, as well as non-neoplastic lesions on epithelial surfaces (skin, urogenital tract, and gastrointestinal tract) (Vashisht, Mishra, Mishra, Ekielski, & Talegaonkar, 2019).

In sheep, goats, cattle, and horses, cutaneous warts are benign tumors brought on by papillomaviruses that are particular to a given host (Al-Salihi, Al-Dabhawi, Ajeel, Erzuki, & Ali, 2020). These infections infect epithelial cells, resulting in benign hyperproliferative lesions that typically resolve independently (Longworth, Laimins, & reviews, 2004). The virus has been linked to neoplastic illnesses, such as bladder cancer in cattle who consume bracken fern, upper alimentary tract carcinoma in cattle, and squamous-cell carcinoma in horses (Faccin et al., 2018). Papillomaviruses are usually host-specific except bovine papillomaviruses and require close touch to spread infection (Bocaneti et al., 2016).

The BPV virion has a double-stranded DNA molecule that is roughly 8000 nucleotides long and is non-enveloped, measuring 55–60 nm in diameter. The long control region (LCR) and the two regions that encode early and late genes make up the three distinct sections of the genome (Pietersen, 2019). The C-terminal of L1 is exposed on the surface of the BPV virion, as shown by an atomic model that has been created. This means that it is likely to be crucial for both BPV infection and immunogenicity (Li et al., 2016). Twelve BPV varieties have been categorized into three genera: Delta papillomavirus (BPV-1 and -2), Epsilon papillomavirus (BPV-5 and -8), and Xipapillomavirus (BPV-3, -4, -6, -9, -10, -11, and -12), with an unassigned PV genus (BPV-7) (Freitas et al., 2011).

Viruses belonging to the Papillomaviridae family cause negative reactions in companion animals as well as livestock. These include teat papillomatosis in cattle, sarcoids in horses, and oral papillomatosis in dogs (Munday, 2014). Bovine papillomavirus (BPV) is undoubtedly the most extensively researched member of this category of papillomaviruses due to its substantial veterinary implications (Gil da Costa, Peleteiro, Pires, DiMaio, & Diseases, 2017). The infection may lead to teat obstruction, hygiene limitations, development to mastitis, teat hemorrhaging, challenges in positioning the mechanical milking apparatus, and is associated

with leather damage (Catroxo, Martins, Petrella, Souza, & Nastari, 2013).

There is limited knowledge related to the transmission of BPV disease between animals (Bocaneti et al., 2016). However virus transmission can happen either directly or indirectly for example, through touch with contaminated objects it is recognized that animal populations in restricted situations are more susceptible to infection (Ugochukwu et al., 2019). Arthropod vector and vertical transmission have been suggested to be possible modes of transmission in addition to the well-known skin-to-skin method (Sangüeza, Sangüeza, & Bravo, 2017). The increased research on blood-borne pathogen transmission of BPV has shown that non-epithelial tissues and fluids can also harbor BPV. This is in line with the finding that BPV has been found in several tissues and cells, including uterine lavage, cumulus cells, oocytes, and ovary (Ugochukwu et al., 2019).

BPV infection can be transmitted through stable management techniques or into existing wounds from contaminated pasture, as well as through contact with contaminated objects, milking equipment, and semen(Sani). Co-factors such as malnutrition, hormone imbalances, mutations, and long-term exposure to sunlight may increase the chance of BPV infection by inducing immunodeficiency (Ugochukwu et al., 2019).

Young cattle frequently get cutaneous warts, especially when housed, but these typically cause little harm and spontaneously disappear (Kosovčević, 2020). Purebred animals may experience difficulties in sales and exhibitions due to their unattractive appearance. Animals with large lesions may become debilitated, and traumatized warts may experience subsequent bacterial invasion. Dairy cows with warts on their teats frequently have trouble milking (Sharma, Gupta, & Bansal, 2020). The lesions are normally not very noticeable from an aesthetic point of view, but they are minor and don't create much trouble for horses. Equines with urogenital lesions, primarily penile and preputial papillomas, may develop squamous-cell carcinoma, a condition with a bad prognosis if treatment is delayed.

The virus attacks basal keratinocytes and replicates its genome in the spinous and granular layers, resulting in excessive development and wart formation (Ugochukwu et al., 2019). Only developed squamous layer cells express the late structural proteins of the virus; as these cells die, fresh virus particles are encapsulated and released into the surrounding environment (Mui, Haley, & Tyring, 2017). Based on the relative amounts of connective and epithelial tissue present, the tumor can be classified as either a fibro papilloma or a papilloma. Fibro papilloma’s have mostly fibrous tissue and very little epithelial tissue while papilloma’s have little

connective tissue (Lateef, 2018). Papilloma's are caused by basal-cell hyperplasia without viral antigen production (Bonnez, 2009).

Clinical findings:

The body temperature was normal. Warts occurred at different parts of the body. They varied in size from 1cm to upward a dry, horny, cauliflower-like appearance. Warts been present for the last 2 months, spreaded on different body sites.

Diagnostic assessment:

On the basis of clinical signs (cauliflower like warts) diagnosis was made.

Therapeutic intervention:

Warts that twist off near the base normally diminish and fall off within a few months. Warts can be removed surgically using scissors or a side cutter. Silver nitrate applicator sticks were used to stop bleeding. To avoid fly infestations a wound spray was used. Typically, warts do not return. Wash the open wound with KMnO4. Pyodine solution was used to prevent secondary infection. Healing was good.

Prevention:

Affected animals should be kept separate from healthy ones. Instruments and feeding pots used on affected animals should be disinfected before use on healthy animals. The affected animal does not necessarily have to have observable warts, but they may infect equipment. Affected animal's areas should be cleaned with formaldehyde on a daily basis.

Patient consent:

Consent was signed by the owner of patient for clinical studies and publications.

Conclusion:

The case presented was successfully treated and discharged. The owner of the animal was asked for follow up and on follow up pathological conditions was healed and warts cured.

Preventive measures were more effective in this case.

References

Al-Salihi, K. A., Al-Dabhawi, A. H., Ajeel, A. A., Erzuki, I. A., & Ali, T. A. H. J. V. m. i. (2020). Clinico-Histopathological and Immunohistochemical Study of Ruminant's Cutaneous Papillomavirus in Iraq. *2020*(1), 5691974.

Bocaneti, F., Altamura, G., Corteggio, A., Velescu, E., Roperto, F., Borzacchiello, G. J. T., & Diseases, E. (2016). Bovine papillomavirus: new insights into an old disease. *63*(1), 14-23.

Bonnez, W. J. C. v. (2009). Papillomavirus. 603-644-602.

Catroxo, M., Martins, A., Petrella, S., Souza, F., & Nastari, B. J. I. J. o. M. (2013). Ultrastructural study of bovine papillomavirus during outbreaks in Brazil. *31*(2).

Faccin, T. C., Cargnelutti, J. F., Rodrigues, F. d. S., Menezes, F. R. d., Piazer, J. V. M., Melo, S. M. P. d., . . . Kommers, G. D. J. P. o. (2018). Bovine upper alimentary squamous cell carcinoma associated with bracken fern poisoning: clinical-pathological aspects and etiopathogenesis of 100 cases. *13*(9), e0204656.

Freitas, A., Silva, M., Jesus, A., Mariz, F., Cordeiro, M., Albuquerque, B., & Batista, M. J. A. J. M. R. (2011). Recent insights into bovine papillomavirus. *5*(33), 6004-6012.

Gil da Costa, R., Peleteiro, M., Pires, M., DiMaio, D. J. T., & Diseases, E. (2017). An update on canine, feline and bovine papillomaviruses. *64*(5), 1371-1379.

Kosovčević, L. (2020). PAPILLOMATOSIS IN DAIRY COWS.

Lateef, S. M. (2018). *Study the clinical and pathological Changes that accompanied with Bovine Papillomatosis.* Ministry of Higher Education,

Li, Z., Yan, X., Yu, H., Wang, D., Song, S., Li, Y., . . . Zhao, Q. J. S. (2016). The C-terminal arm of the human papillomavirus major capsid protein is immunogenic and involved in virus-host interaction. *24*(6), 874-885.

Longworth, M. S., Laimins, L. A. J. M., & reviews, m. b. (2004). Pathogenesis of human papillomaviruses in differentiating epithelia. *68*(2), 362-372.

Mui, U. N., Haley, C. T., & Tyring, S. K. J. J. o. c. m. (2017). Viral oncology: molecular biology and pathogenesis. *6*(12), 111.

Munday, J. J. V. p. (2014). Bovine and human papillomaviruses: a comparative review. *51*(6), 1063-1075.

Pietersen, I. (2019). Working towards a plant-produced Bovine papillomavirus vaccine: Expression of BPV1 virus-like

particles and pseudovirions in Nicotiana benthamiana.

Rector, A., & Van Ranst, M. J. V. (2013). Animal papillomaviruses. *445*(1-2), 213-223.

Sangüeza, O. P., Sangüeza, M., & Bravo, F. (2017). *Dermatopathology of Tropical Diseases: Pathology and Clinical Correlations*: JP Medical Ltd.

Sani, A. J. A. Iniobong Chukwuebuka Ikenna Ugochukwu, Chioma Inyang Aneke, Idoko Sunday Idoko, Nuhu Abdulazeez.

Sharma, S., Gupta, D., & Bansal, B. J. I. J. o. L. R. (2020). Udder and teat skin lesions in bovines. *10*, 1-14.

Ugochukwu, I. C. I., Aneke, C. I., Idoko, I. S., Sani, N. A., Amoche, A. J., Mshiela, W. P., . . . Sackey, A. K. B. J. C. C. P. (2019). Bovine papilloma: aetiology, pathology, immunology, disease status, diagnosis, control, prevention and treatment: a review. *28*, 737-745.

Vashisht, S., Mishra, H., Mishra, P. K., Ekielski, A., & Talegaonkar, S. J. C. p. b. (2019). Structure, genome, infection cycle and clinical manifestations associated with human papillomavirus. *20*(15), 1260-1280.