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Case Report

REFRACTORY BOVINE PAPILLOMATOSIS IN A THIRTEEN-MONTH-OLD WHITE FULANI CALF: A CASE REPORT

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ABSTRACT

Bovine papillomatosis is a common, self-limiting viral disease in young cattle. However, severe, treatment-resistant cases can occur. This report presents a case of an aggressive papillomatosis in a 13-month-old White Fulani calf that failed to respond to multiple doses of ivermectin. Despite initial signs of health, the animal developed extensive facial warts that worsened over months. The case highlights the limitations of pharmacological treatment and suggests the importance of early diagnosis and surgical intervention for extensive lesions.

Keywords: Bovine papillomatosis, Cattle warts, Ivermectin, Papillomavirus, White Fulani

INTRODUCTION

Cattle wart also known as Bovine Papillomatosis (BPV) is a viral disease caused by contagious bovine papillomavirus (Gallina *et al*., 2020), primarily affecting young cattle. BPV is a small circular double-stranded DNA genome virus that belongs to *Papillomaviridae* family, which shows tropism for epithelial and mucous tissues (Araldi *et al*., 2017).

The disease is characterized clinically by the development of multiple shaped and size benign tumors termed "warts". Bovine papillomatosis is a growth that can become neoplastic and contagious, characterized by the manifestation of multiple papillomas, which can regress spontaneously or progress to malignancies, such as upper alimentary tract and urinary bladder carcinomas (de Carvalho *et al*., 2016; Elghmry *et al*., 2025).

Transmission occurs through direct contact with infected animals or contaminated fomites, including feeding equipment, tagging tools, and rectal sleeves (Gallina *et al*., 2020). The role of vectors, specifically arthropod vectors, has been reported as a possible mode of transmission of BPV, although direct and indirect route are generally shown as the primary modes of spread (Tariq & Shah, 2024).

Five genera and about 28 different types of papillomaviruses have been identified (Bauermann *et al*., 2017), namely, BPV types 1, 2, 13 and 14 belong to the genus *Delta papillomavirus* and exhibit a somewhat broader host range and tissue tropism than other types; they cause fibropapillomas in cattle and sarcoids in horses (Roperto *et al*., 2021), BPV types 3, 4, 6, 9, 10, 11, 12, 15, 17 and 23 belong to the genus *Xipapilloma virus*; they are restricted to cattle and infect only epithelial cellsto induce true papillomas, BPV types 5 and 8 are members of the genus *Epsilonpapilloma virus* and appear to cause both fibropapillomas and true papillomas (de Carvalho *et al*., 2016), BPV 16 and 18 belongs to the genus *Dyokap papilloma virus*, while BPV 7, 19 and 21 belong to the genus *Dyoxipapilloma virus* 1, the remaining seven types, 20, 21, 22, 24, 25, 26 and 27 belong to unclassified genera (Bauermann *et al*., 2017; Shehata *et al*., 2025).

Surveys for papillomavirus DNA in normal bovine skin and dermal tissues show that the viruses are widespread, most often without any obvious lesions. This apparently latent DNA may be reactivated at sites of injury, leading to papilloma formation (Pandya *et al*., 2025).

The disease, though typically self-limiting, but the timing of regression is unpredictable and ranges from one month to over one year and can affect animal health, reduce hide value, and interfere with reproductive performance when lesions involve the genitalia. Severe cases may require intervention, especially if secondary infections or extensive growth occurs (Njaa *et al*., 2012; Elghmry *et al*., 2025).

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CASE PRESENTATION

In July 2024, a 13-month-old White Fulani calf (~100 kg) from a private farm at Osun State was reported to have developed some nodule-like growths on the skin covering the head and the neck regions of the body. On examination, lesions were observed to be heavily concentrated and appear as large, dense, cauliflower-like masses in the lateral face covering a significant area on the side of the face, extending from below the eye toward the jaw.

Multiple, smaller, pedunculated growths were also visible on the exterior surface of the ear pinna and around the base of the ears. Lesions extended down the neck area, particularly the lateral and ventral surfaces. Individual or smaller clusters of warts were visibly scattered across the forehead and muzzle region. These lesions and the distribution were characteristic of cutaneous Bovine papillomatosis, which often affects the head, neck, and shoulders, particularly in younger cattle.

Despite the spread of the lesions over the facial region of the body, almost occluding the eye, the animal remained otherwise healthy, with a good appetite. By December 2024, the warts had increased significantly in size and number, emitting foul odor and attracting flies. The lesions were sessile, hyperkeratotic, rough, and irregular, but non-painful.

Initial treatment involved subcutaneous administration of ivermectin (Centre-ivermec® 1% injection, Aether Centre (Beijing) Biology Co. Ltd) at 0.2 mg/kg, repeated twice at two-week intervals, and a single dose of oxytetracycline (Tetranor®, L. A. 20% JubailiAgrotec Group) at 10 mg/kg. Despite treatment, by January 2025 (Figure IA), warts covered approximately three-quarters of the animal's face. No improvement was observed by February 2025 (Figure IB), prompting the decision to cull the animal due to welfare concerns and deteriorating condition.

Figure IA: Presentation of cattle in January

Figure IB: Presentation of cattle in February

DISCUSSION

Warts, also known as papilloma, are caused by a highly contagious virus. Therapeutic and surgical interventions have been used in the treatment of papillomatosis with limited success (Ugochukwu *et al*., 2018). Jana & Murkherjee (2012) reported that three doses of ivermectin was effective for treatment of bovine cutaneous papillomatosis in Bengal. Borku *et al*. (2007) also reported that ivermectin, as either single or double dose applications *were effective* for the treatment of the disease. In the case reported, three doses of ivermectin did not slow down the progression of the lesion nor remove it. This finding is different from the report of Usman & Gwadabawa (2024) who reported a complete recovery from cutaneous papillomatosis in a calf after the application of surgical excision and treatment with Ivomec super®, the difference in outcome may be attributed to the nature of spread and the surgical evaluation to excise the lesions followed by treatment with Ivermectin and Clorsulon (combined in Ivomec Super®) which was not the approach in the current report.

The persistence of the wart lesions depends on the type of virus, area affected and susceptibility of the individual animal. Papillomavirus infections can cause non-neoplastic lesions on epithelial surfaces (skin, urogenital tract, and gastrointestinal tract) as well as neoplasms like human papillomavirus and cervical cancer **(**Maghiar *et al*., 2024**)**. Another factor may be the age of the cattle (13 months) which is the age range of animals that are mostly affected as few incidences of warts have been observed in cattle older than two years. Calves are the most vulnerable. According to reports, warts usually shrink and drop off after a few months. The spontaneous recovery has probably been the basis for the alleged effectiveness of many regimes of treatment, including several kinds of oil, toothpaste of various brands, wart pinching, or twisting off close to the base (Ugochukwu *et al*., 2018). Any of these appear to be successful if the warts regress spontaneously.

Although multiple injections of vaccines have been credited for being an effective cure (Saied, 2021), there is no vaccine for the disease marketed in Nigeria. The current case however was not successfully treated with ivermectin. Early consideration of surgical removal or other interventions may be warranted in progressive cases. Warts can be removed surgically with a scissors or a side cutter but that intervention could not be administered due to the extensive nature of the lesions in the current case.

CONCLUSION

This case illustrates that while ivermectin is effective in some instances of bovine papillomatosis, it may not suffice in all cases. Early identification and prompt surgical management may be necessary, especially when lesions are rapidly expanding. Further investigation into local vaccine development and standardized treatment protocols is recommended.

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