



CUTANEOUS PAPILLOMATOSIS IN WEST AFRICAN DWARF GOATS AND ITS ECONOMIC IMPORTANCE: CASE REPORT

Davinson C. Anyogu

Department of Veterinary Pathology and Microbiology, University of Nigeria, Nsukka 410001, Enugu, Nigeria

Address for correspondence: Email: davinson.anyogu@unn.edu.ng

Phone: +2347036841871

Abstract

Cutaneous papillomatosis is a contagious neoplastic viral disease of animals characterized by the presence of multiple skin tumours or growths, principally on the head part. Although they regress spontaneously, the furtherance to the malignant form may necessitate culling or slaughtering of the animal which is problematic and of economic significance. The gross features of this condition were described in West African dwarf (WAD) goats and compared with those of cattle.

Keywords: Cutaneous papillomatosis, West African Dwarf Goat, Economic importance

Introduction

Papillomaviruses are species-and site-specific double stranded DNA-viruses that infect all species of animals. The viruses are both epitheliotropic and mucosotropic, infecting the squamous epithelium and causing benign proliferative lesions that often undergo malignant transformation. Malignant transformation occurs when the virus becomes integrated into the host's genome causing damage to the host's DNA, inactivating the tumour suppressor protein and promoting keratinocyte cell growth (Hargis and Gin, 2012).

Mucosal papillomaviruses are estimated to cause 5.2% of all human cancers. Papillomaviruses have been strongly associated with squamous cell carcinomas of the cervix, vagina, penis, anus, and oral cavity in humans, as well as with feline and equine sarcoids. (Gillison *et al.*, 2000; Teifke *et al.*, 2003; Parkin, 2006; Nasir and Campo, 2008; zur Hausen, 2009).

Cutaneous papillomatosis is not common in goats unlike cattle. However, papillomavirus associated skin lesions have frequently been observed in the West African Dwarf (WAD) goats in our local environment. The present study is aimed to evaluate the gross pathological features of cutaneous papillomas in the WAD goats and highlight the economic importance of the disease.

Case Description

Two male WAD goats, aged 2-3 years and weighing average of 12kg, belonging to the Veterinary Teaching Farm, University of Nigeria, Nsukka were observed to be off feed, listless and with rapidly proliferating skin lesions. They were brought to the Veterinary Teaching Hospital, University of Nigeria, Nsukka for diagnosis and treatment. On physical examination, prominent papilliferous projections which bled freely



were observed around the oral commissures and tip of the ears, ventral, lateral and dorsal aspects of the thoracic region as well as within the inter-digital spaces (Figure 1).

Case Management

Based on the gross morphology of the lesions, cutaneous papilloma was suspected and the diagnosis was confirmed by biopsy and histopathology. At microscopy, foci of keratinized epidermis were observed. Although the body condition scores of both goats were not necessarily too poor, however, they were recommended for euthanasia to avoid the spread of the infection. Euthanasia was achieved by intravenous injection of Na-pentobarbitone at the dose of 150mg/kg body weight. Necropsy did not reveal any form of visceral involvement.

Discussion

The lesions of papillomatosis occurred in the WAD goats as papilliferous projections differs from the gross morphology of the lesions in cattle known to take the form of flat plaque-like masses, proliferating either to the exterior (exophytic masses) or to the interior (endophytic masses). The difference in the morphology of the lesions has been attributed to the papillomavirus type causing the disease in a particular animal species. At microscopy, the cytopathology of the disease in goats and cattle may be worsened by secondary bacterial infection. This was not the case in this report probably due to timely presentation of the animals for medical attention.

It is generally believed that dissemination of cutaneous papillomavirus infection is by contact via skin abrasions. However, bovine papillomavirus (BPV) DNA sequences were detected in uterine and ovarian fragments as well as in semen of infected ruminants showing cutaneous lesions and those apparently healthy but only exposed to the endemic environment (Yaquiu *et al.*, 2006). This finding has been said to suggest an alternative route of transmission that could contribute to the widespread incidence of BPV infection in ruminants and the complexity of its pathology.

In one study, it was observed that 76.92% of cattle diagnosed of BPV infection had tick infestation, and majority had PGE nematodes and *Fasciola* helminthes (Salib and Farghali, 2008). Papillomaviruses, however, have not been isolated from these parasites and their role in the spread of the infection remains unclear.

Over the years, various molecular diagnostic techniques have been employed to characterize papillomaviruses and these include *in situ* hybridization, PCR and gene sequencing. So far, eight (8) viral types, defined by serology or nucleotide sequences of the L1 gene, have been identified and these are associated with different geographical regions (Silva *et al.*, 2010).

The economic importance of the disease is related to the severe skin injuries and inability of affected animals to thrive; especially when the lesions interfere with feeding, secondary bacterial infection, distortion of milk canals; when the udder is affected, and poor market value due to aesthetic reasons (Freitas *et al.*, 2011).

Conclusion

The most logical management approach to the spread of cutaneous papillomatosis is culling of the affected animals, although some cases have been managed by a combination of ivermectin injection, manual excision and application of topical antiseptic (Feyisa, 2018).



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Figure 1: West African Dwarf (WAD) goat with cutaneous papillomatosis