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Cutaneous viral papillomatosis on the teat in a jersey cow

Gökhan N*

Vocational Training School of Health Services, University of Gumushane, Gumushane, Turkey

Abstract

In the present paper, cutaneous viral papillomatosis determined in one cattle was evaluated with concern to clinical and histopathological findings. The study material was a six years old Jersey cow that she had three deliveries. In clinical examination, diffuse papillomatous growth was detected in all the skin surface of the mammary glands. Samples collected with an excisional biopsy from mammary skin tissue sent for histopathological examination. In the histopathological examination of the specimens revealed the cutaneous viral papillomatosis of the skin from the mammary glands region. As a result, in cutaneous viral papillomatosis case age, breed, environment and applied treatment reported to be important.

Introduction

Papilloma viruses are connected to papovaviridae family comprising affiliated, tiny and double chain DNA [1-5].

Skin papillomatosis is a viral disease constituted by papillomavirus characterized by epithelial proliferation [6]. Cutaneous papillomas are benign type of tumor of stratified squamous epithelium [7,8]. This tumor is named as papillomatosis when it emerges from more than one and is usually seen on the skin and mucosas [3].

Direct contact is an important infection reason in the emergence of skin papillomatosis and contaminated materials like cord, earrings, tuberculin injections, heredity, hormonal disorders, vitamin deficiencies and mutation factors play also important role [1,5-7,9-13].

It is usually occurs in mammals and avians [14,15]. It is generally reported in cows, horses, and dogs. However, it occurs mostly in cows [10,13]. Although skin papillomas emerge in almost every part of the body in cows, it is detected mostly around the head, neck, mammary glands, back, stomach and extremities [3,7].

12 different species-specific serotypes of the virus have been reported. BPV 1, 2 and 5 causes fibropapillomatosis, whereas BPV 3, 4 and 6 are the reasons for the epithelial papillomatosis [8,10,17]. Type 1, 5 and 6 may cause papillomas in the skin of the mammary glands in cows [11,17]. Infection made by BPV 6 in the mammary glands may affect excretory ducts and is a reason for economic loss [18].

The aim of this paper to share the papillomatous phenomenon with a different appearance than the known cutaneous papillomas.

Case history

Disease of this study is a Jersey race cow having 3 births aged 6.5 years. In clinical examination, papillomatosis was seen in all the epidermal surface of the skin particularly from teats (Figures 1 and 2). For the treatment purpose Theranecron was applied with no sign of recovery.

Histopathology

Epidermis revealed marked ortho keratotic and para keratotic hyperkeratosis. The dermal papillae were elongated with irregular rete ridge formations covered by acanthotic epidermis (Figure 3). In the granular layer numbers and sizes of keratohyalin granules were elevated (Figure 4). In the stratum spinosum layer numerous koilocytes characterized by eccentric, slightly enlarged nuclei that were displaced by large perinuclear vacuole were also common finding (Figure 4).

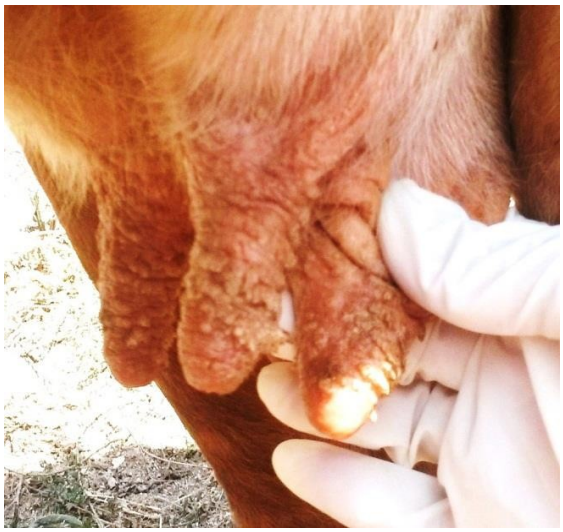

Figure 1. Clinical appearance of the case

Discussion

Cutaneous papillomatosis causing widespread lesions is more frequently detected in domestic and wild animals. Cows are the most affected animals. The disease is more widely known for the cows under 2 years, but it may be seen any age group [7,17,19]. The tumors in cows' 5-years or above are usually ocular squamous cell carcinomas but in our case cutaneous papilloma is detected.

Correspondence to: Gökhan N, Vocational Training School of Health Services, University of Gumushane, Gumushane, Turkey, E-mail: nezihegokhan@hotmail.com

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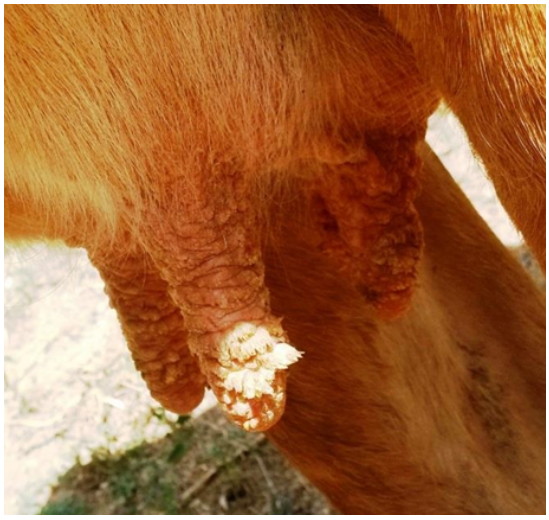

Figure 2. Skin of the all teats are covered with multiple papillomatous proliferation

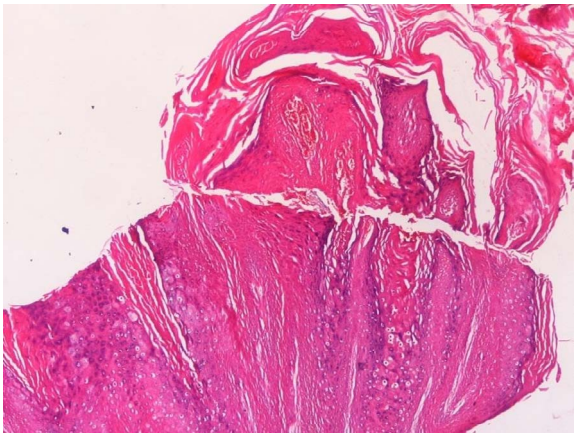

Figure 3. Epidermis is showing marked hyperkeratosis with irregular rete ridge formations. H&Ex4

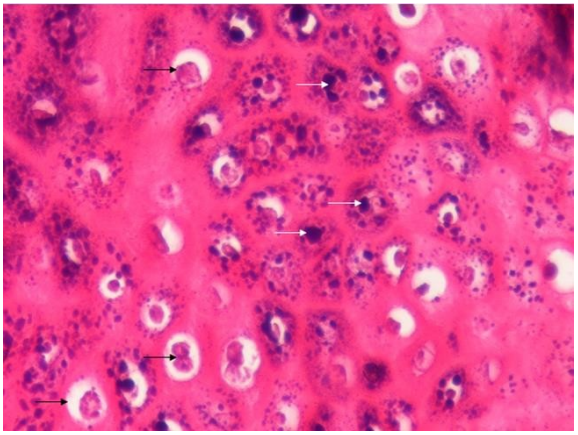

Figure 4. In the granular layer numerous various sized keratohyalin granules *(white arrows)* with presence of numerous koilocytes *(black arrows)*. H&Ex40

Papillomaviruses are resistant to environment, detergent and high temperatures [5]. Congenital and acquired deficiencies in cellular immunity pave the way for papilloma emergence [5]. Villiers and his colleagues, in a research they conducted on human papilloma, proved that cutaneous tumor developments in allograft receptors occurred 6-7 years after explosion to sun and transplantation [20]. They also showed that following the immune suppressive treatments, incidence of cutaneous malignancies significantly increased.

Profilactic and therapeutic vaccination can be applied against papilloma viruses in cows [18].

Theranecron (Tarantula cubensis) is reported to be effective in treatments of cutaneous papillomatosis in cows and in the growth of mammary gland tumors [21]. However, in our case it was not effective since it was not used regularly.

Lesions caused by Papillomavirus have an important effect on animal health and is the reason for huge economic loss in farm animals. In our case, following Papillomavirus infection on the skin of the mammary glands and teats it was reported a significant decrease in milk production of the animal.

In conclusion, ages, environment of animal and treatment type applied are important in cows' cutaneous papillomatosis along with early diagnosis and adequate treatments are the significant factors that elevate success rate.

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