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PATHOLOGICAL STUDY OF CUTANEOUS PAPILLOMA IN SHEEP

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Abstract: Ovine papillomatosis is caused by ovine papilloma virus but it is uncommon when compared with other animal species. The aim of the present study was to describe the clinical and histopathological aspects of naturally occurring ovine cutaneous papillomatosis. A total of 71 tumours suspected sheep, aged between 6 and 48 months, were examined and papillomas was diagnosed in three cases (4.23%) by clinical examination. In one case grossly, single, solid and pedunculated growth was noticed on the sheep ear tip. Histopathology revealed various degrees of acanthosis and hyperkeratosis Diagnosis was based on clinical signs and histopathological findings.

Keywords: Ovine, Ear, Papilloma, Histopathology.

Introduction

Papillomatosis associated with papilloma virus infection has been described in many animal species and in humans (Blood, 1989) but uncommon in sheep. Papilloma viruses are highly diverse group of small, non-enveloped, double stranded DNA viruses that cause proliferations of the stratified squamous epithelium of the skin and of the mucosa in a wide variety of host species (Bernard et al., 2010 and Hausen and De Villiers, 1994). However, the two papilloma virus genotypes OaPV1 and OaPV2 isolated so far in sheep seems to be associated only to fibropapillomas and have never been observed as precancerous lesions and skin tumors. The spread of the disease is usually via direct contact, contaminated food and equipment, castration and injections. Inheritance, nutritional and hormonal disorders, sunlight and suppressed immune system may play important roles in pathogenesis of disease (Nicholls and Stanley, 2000).

Materials and methods

Biopsies were obtained from three sheep that are showing lesions macroscopically indicative of papillomas. Following biopsy, masses were fixed in 10% neutral buffered

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formalin and embedded in paraffin by routine methods. Sections were cut4-5 μm in thickness and were stained with hematoxylin and eosin (Luna, 1968).

Results and Discussion

The three out of 71 sheep that were ranging between 6 and 48 months, developed clinical papillomatosis. The percentage of papilloma or papillomatosis was found as 4.23% (3/71). Macroscopically, grey-white, single, finger like, pedunculated and solid tumour growth with broad base was observed on the ear (Fig. 1) of one sheep. Microscopically, varying degrees of hyperplasia of the epidermis with irregular papillary projections extended into the dermis (Fig. 2) was noticed. The epidermis was greatly thickened with enlarged papillae, moderate to severe acanthosis and severe hyperkeratosis. Vacuolar changes in the individual keratinocytes and some of the koilocytes having central nuclei with fine chromatin and severe dilatation of sweat glands (Fig.3) was observed.

Ovine papillomatosis is uncommon viral disease of the skin, manifested as benign tumors or warts, caused by ovine papilloma virus. In this study, cutaneous papillomatosis was detected in sheep. Papillomatosis may become a significant herd problem when a large group of young animals become infected. Information about epidemiological aspects of papillomas in sheep is practically non-existent. The presence of these lesions on the front and lateral aspects of the legs, ears and on the muzzle indicate these areas are most susceptible to minor trauma during grazing, suggests that this played a role in the transmission of the virus (Gardiner et al., 1967). In the present study also papilloma was noticed on the ear. These papilloma viruses produced a number of hyperplastic and neoplastic lesions in a wide variety of animal species (Sundberg, 1987). In addition, papillomas are believed to be precursor lesions for squamous cell carcinomas in goats (Moulton, 1954), cattle (Campo, 1997) and humans (Hausen and de Villiers, 1994). In the present study, no precursor lesions were noticed. Trenfield et al., 1990 and Uzal et al., 2000 reported similar gross and microscopic lesions.

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Figures:

Figure 1: Sheep ear: Note single, pedunculated and solid growth on the ear margin.

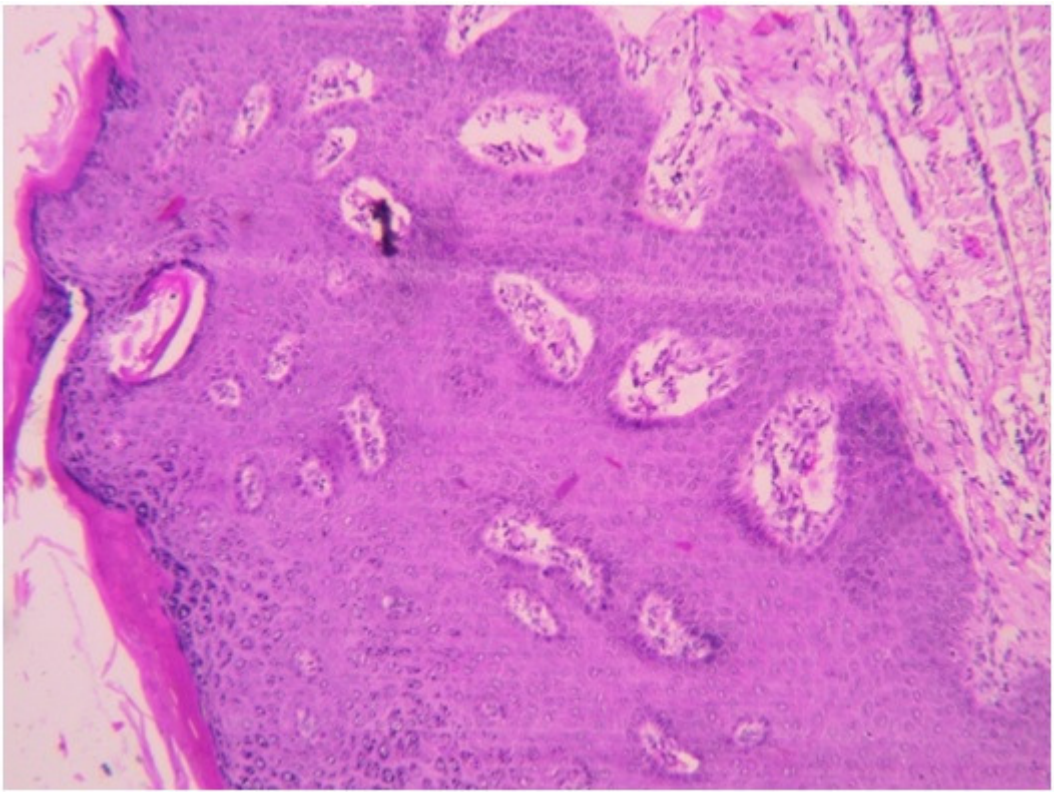

Figure 2. Epidermis: note hyperkeratosis and acanthosis in keratinocyts with irregular papillary projections H &E x 100.

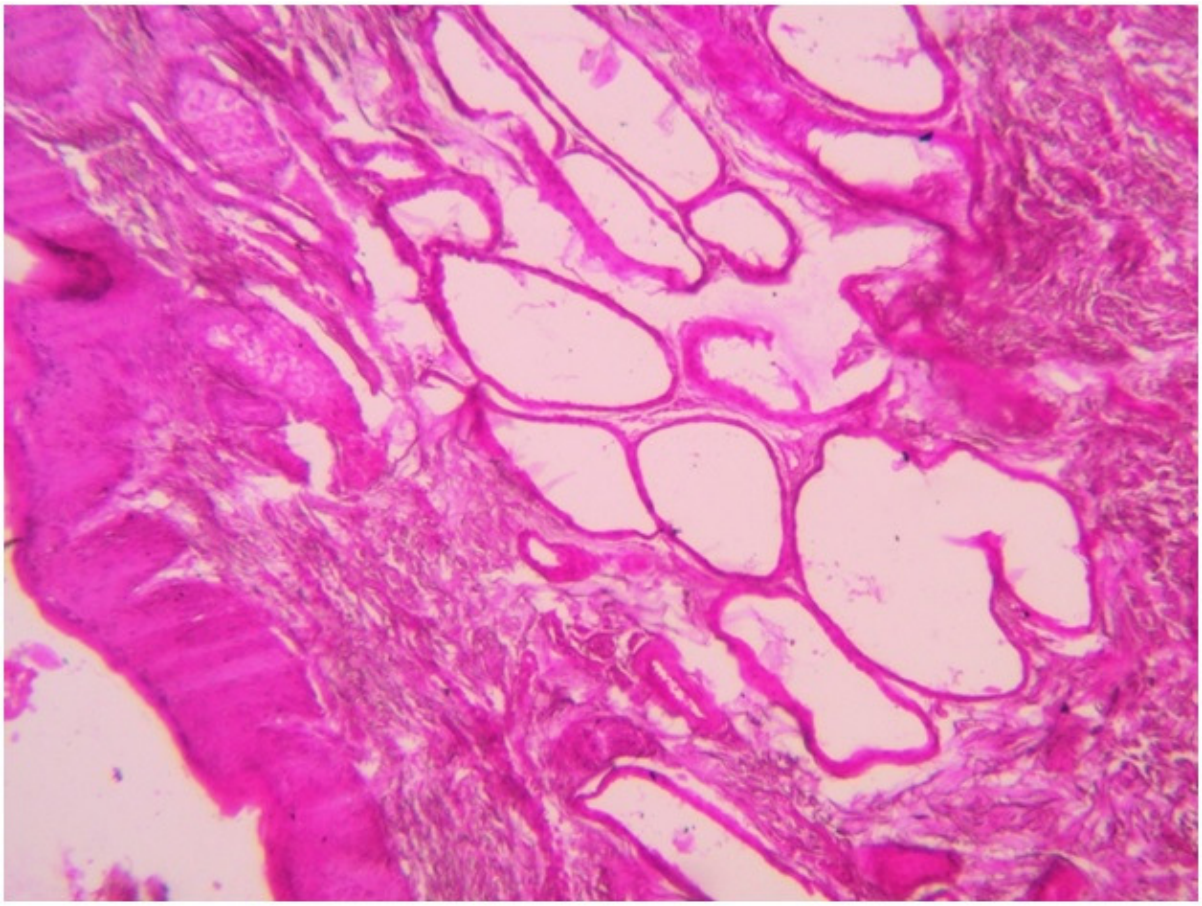

Figure 3: Epidermis: Note severe dilatation of sweat glands H & E x 100.