SKIN PAPILLOMAS IN AN IMPALA (Aepyceros melampus) AND A GIRAFFE (Giraffa camelopardalis) 1

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SKIN PAPILLOMAS IN AN IMPALA *(Aepyceros melampus)* AND A GIRAFFE *(Giraffa camelopardalis)* [1]

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Abstract: Viral particles, typical of the papovavirus family, were demonstrated by electronmicroscopy in small papillomas found on the feet of an impala *(Aepyceros melampus)* and on the face of a giraffe *(Giraffa camelopardalis)* in Kenya. Histologically the tissues proved to be typical papillomas. The viral particles measured 38 nm and 40 nm in diameter in all tissue sections from the impala and giraffe respectively.

INTRODUCTION

Papillomas, benign epithelial tumors, have been described on the skin of many species of mammals. Reports of skin papillomas on wild mammals include the cottontail rabbit *(Sylvilagus floridanus),*[10] deer of the genus *Odocoileus,*[4] moose (Alces alces),[4] chamois *(Rupicapra rupicapra),*[9] serow *(Capricornis crispis),*[3] impala,[1] opossum *(Didelphis marsupialis),*[8] coyote *(Canis latrans)*[5] and several species of primates.[2] Electronmicroscopy of the deer, serow, coyote and opossum papillomas has revealed virions typical of papovaviruses.[3,5,8,11]

This is a report of similar virus particles in papillomas of an impala and a giraffe.

OBSERVATIONS

An adult male impala, shot near the Suguroi River, Kenya, in January, 1976 was found to have several small (ca. 5mm) nodular skin tumors on the feet. These tumors were dark, raised, hairless and their surfaces were fissured. Histologically they proved to be typical papillomas, composed mainly of hyperplastic stratified squamous epithelium in papilliform arrangement. The epithelium was supported by delicate strands or cores of fibrous connective tissue. It was abnormally thickened and there was some evidence of acanthosis (Fig. 1).

In October, 1976, a subadult male giraffe, captured by drug immobilization during a trypanosomiasis survey at Kiboko, Kenya, was found to have several small skin tumors up to 1 cm in diameter on its face. One such tumor was excised from the rim of a nostril. The wound was treated with an antiseptic, and the animal was released. The lesion was hairless, raised slightly above the surrounding skin, fissured, firm and dark. On histologic examination it resembled the impala papilloma, with the exception that keratohyaline granules were particularly prominent in the upper stratum spinosum and cells loaded with granules seemed to have a tendency to lyse (Fig. 2).

A careful search was made for intranuclear inclusions, occasionally described in papillomas,[10] but none were found.

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FIGURE 1. Impala papilloma. Hyperplastic stratified squamous epithelium makes up the bulk of the tumor. Normal skin is to the right. H & E. × 160.

FIGURE 2. Giraffe papilloma. Darkly stained basal cells in folded arrangement overlie a small amount of loose connective tissue in the centre of each papilla. Keratohyaline granules (black) are in the cytoplasm of cells of the stratum spinosum or free after lysis of these cells. The cornified layer is almost unstained Giemsa. × 400.

Formalin-fixed tissues from the impala and giraffe lesions were respectively cut into small pieces and fixed for electron-microscopy according to the methods of Ito and Karnovsky.[6] The remainder of the procedure followed was as described elsewhere.[7]

Examination with the electron microscope revealed intranuclear viral particles in some cells in the stratum spinosum and occasionally in cells in the stratum corneum. The viral particles observed in the sections from the two species were similar in location, size and morphology. They were usually seen to be in the nuclei of cells, except in certain instances when viral particles were observed but the cell structures were not recognizable, or when viral particles were embedded in dense keratinous material (Figs. 3,4). The viral particles were uniform in size and occurred in clusters of closely-packed crystalline formation. They were round to oval and had distinct hexagonal outlines when observed in crystalline formations. An envelope was not apparent around the virions. These properties were seen in the tissues obtained from both animals (Figs. 3,4,5). The average diameter of viral particles measured from the tissue sections was 38 nanometers (nm) for the impala papilloma and 40 nm for the giraffe papilloma.

CONCLUSIONS

From the above descriptions it may be concluded that impala and giraffe have papillomas caused by a papovavirus, or papovaviruses, similar to those which cause papillomas in other species.[3,5,11] Cutaneous papillomas on impalas in Southern Africa have been mentioned in a paper by Basson *et al.*,[1] but no description was given. We have not found references to papillomas on giraffe. It is unlikely, in view of the apparent rarity of papillomas on impala and giraffe, that large tumors are common, or surely they would have been noticed as a cause of serious interference with vision, feeding, or locomotion, as is sometimes the case with deer in North America which develop massive multiple papillomas.[4]

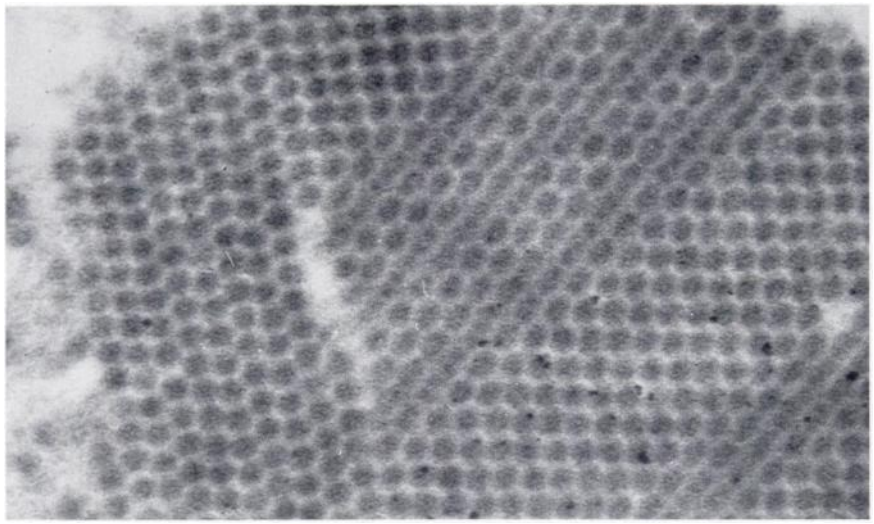

FIGURE 3. Impala papilloma. Electron micrograph showing aggregates of densely packed virus. × 129,000.

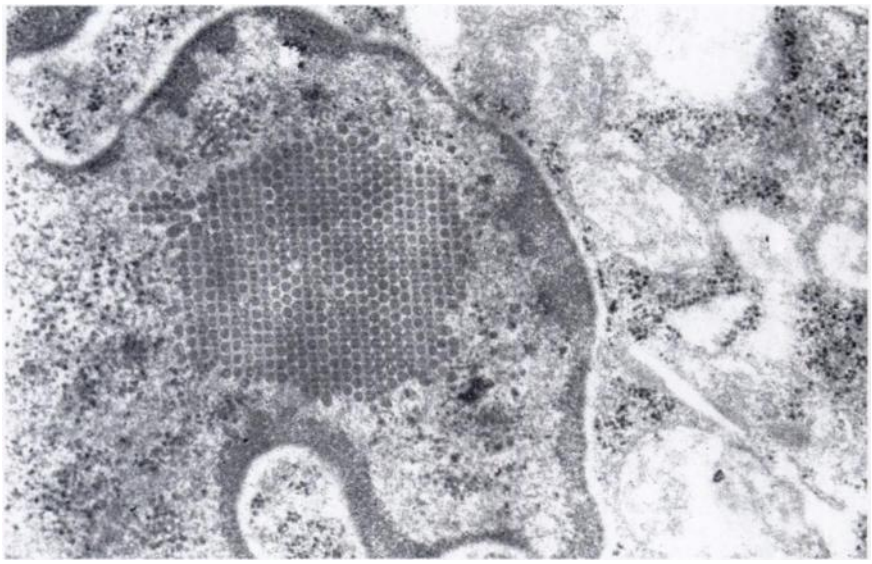

FIGURE 4. Electron micrograph of giraffe papilloma. Note the intranuclear viral aggregate, the lobulated nuclear membrane and margination of chromatin. The virions exhibit hexagonal profiles in crystalline arrangement. × 57,000.

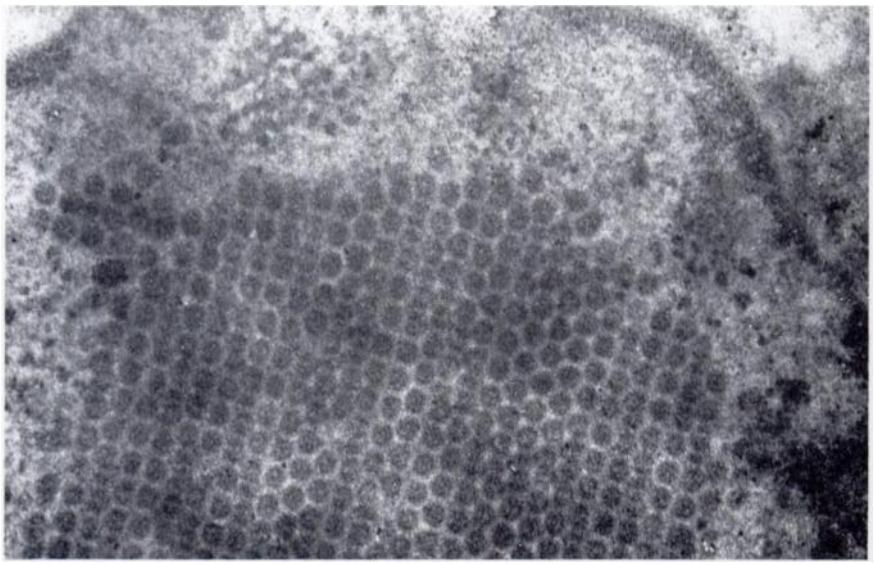

FIGURE 5. Giraffe papilloma. Higher magnification of figure 4 to show the distinct hexagonal profiles of the viral particles in crystalline formations. Note that no envelope is apparent around the virions. × 129,000.

Acknowledgements

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