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STUDIES ON A CASE OF PAPILLOMATOSIS IN THE EYED LIZARD *LACERTA LEPIDA*

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SUMMARY

A striking case of cutaneous papillomatosis is reported in *Lacerta lepida*. The tumours, showing a similar basic histological pattern, involved eyelids on both sides, the whole margin of cloaca, femoral pores and part of one hind foot. They are, probably, a fungal disease.

INTRODUCTION

Papillomas of the skin are the most frequent tumours of lizards. These fibroepithelial new growths, often multiple (Papillomatosis), display a characteristic papillary structure. Although histologically benign, they can lead to the animal's death by occluding natural orifices.

Papillomas have been described in *Lacerta muralis*, *Lacerta agilis* (Koch, 1904; Stolk, 1953) and, chiefly in *Lacerta viridis* (Blanchard, 1890; Plehn, 1911; Schnabel, 1954; Raynaud & Adrian, 1976, 1977; Harshbarger, 1965–1977). To our knowledge, a single case has hitherto been reported in *Lacerta lepida* (Reichenbach-Klinke, 1977: fig. 149a).

Causes of the lesions are still debated. Fungi (Blanchard, 1890), acarians and physical injuries have been successively suggested. The present-day trend is to ascribe the disease to a viral agent. Evidence for this is either indirect, such as nuclear inclusion bodies in tumour epithelial cells (Harshbarger, RTLA No. 1821) or direct, such as viral particles (Raynaud & Adrian, 1976, 1977).

We have recently observed an extensive tumoral process in *Lacerta lepida*, as remarkable as the first above-mentioned case but differing in its main pelvic localizations. This paper reports the morphological traits of the lesions and discusses their probable aetiology.

METHODS

The diseased lizard, an immature male 100 + 115 mm long, was examined macroscopically just after its death then photographed in the laboratory.

Every tumour was totally excised with subcutaneous fat and muscles, fixed afterwards in Bouin's fluid and included finally in paraffin. The serial slides were stained with hematoxylin–eosin–orange G, Masson's trichrome and Hotchkiss–McManus technique (PAS), the latter being of great value to demonstrate fungi (Kligman, Mescon & De Lamater, 1951).

RESULTS

MACROSCOPY

Tumours injured the eyelids on both sides, the whole margin of cloaca and the hind-limbs. In every localization, tumours appeared as brown rough bark-like outgrowths, very protruding and more or less pedicellate. On the eyelids, they were low and gathered in little clusters overhanging directly the cornea. The cloaca was completely encircled by long slender projections forming a kind of collar (Fig. 1). Each hind limb bore a linear range of big excrescences situated along femoral pores and thus simulating long pendants hanging from the thighs (Fig. 1). Another new growth lay on the right hind-foot; it involved the skin of two toes and tarsus (Fig. 1).

HISTOLOGY

Histologically, the whole tumoral burden of *Lacerta lepida* originates from the integument superficial layers: epidermis and loose chorion (Fig. 2). These two layers, the former being lifted by connective tissue, builds up papillary eminences uniting to constitute new-growths like other papillomas (Klein, 1952). Epithelial component derives from the whole epidermis with which it becomes united in the periphery of the lesions. Maurer

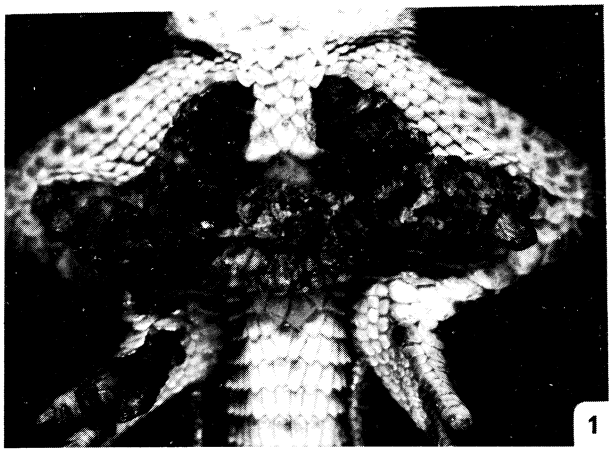

FIG. 1. Papillomatosis of cloaca, thighs and hind foot: a ventral view.

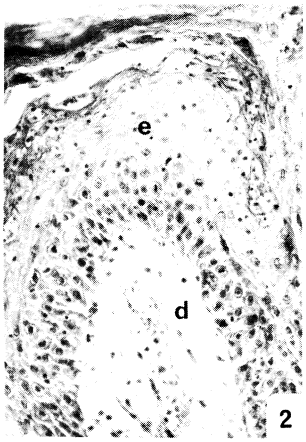

FIG. 2. Part of a femoral tumour: hyperplasic epidermis (e) and derm (d). Hematoxylin–eosin–orange, G × 625.

strata can still be readily identified. However, the epidermicule has disappeared. The stratum corneum is greatly thickened. Its superposed lamellae keep, in some points, recognizable nuclei (parakeratosis). The stratum intermedium and stratum spinosum remain, as a whole, rather thin, but intercellular spaces are widened, here and there, by spongiosis making their bridges (desmosomes) more conspicuous. The cells do not show nuclear or cytoplasmic inclusion bodies. As for the stratum profundum, it is characterized by an important multiplication of its germinative or basal cells; they divide actively and accumulate in several layers producing a typical hyperplasia picture (Fig. 2). At every level a great number of migratory cells, heterophyl and macrophages, are seen coming from the underlying dermis (exocytosis). They insinuate into the intercellular spaces, then into the deep loose layer of the keratin coat; they tend to accumulate just under the keratin coat and there constitute microabscesses. The cornea, femoral glands and the cloaca interior are not involved. The dermis is slightly œdematous (Fig. 2) it contains dilated vessels and a chronic inflammatory infiltrate. Pigment cells, contrary to other lizard papillomas (Blanchard, 1980; Raynaud & Adrian, 1976) are always lacking. Among granuloma, numerous spongy macrophages are sometimes present; they slip through basal cells layers. They also form giant cells, either by uniting their cytoplasms or by amitotic nucleus division. In these giant cells, which strongly resemble the Touton cells of xanthoma, the nuclei lie near the centre, gathered around a small chromophilous island and are surrounded by foamy cytoplasm (Fig. 3). Routine stainings suggest innumerable faintly-coloured particles lying in the whole papillary dermis, in the cytoplasm of macrophages, giant cells and, as far as the stratum corneum, between epidermal cells (stratum profondum, intermedium). A very conspicuous feature of the particles is their strongly positive reaction with PAS stain. Through this property they appear as round bodies, alone or in chains, or as discrete club-ending thread-like structures more or less segmented in appearance, lying free in the tissues or within the cytoplasm.

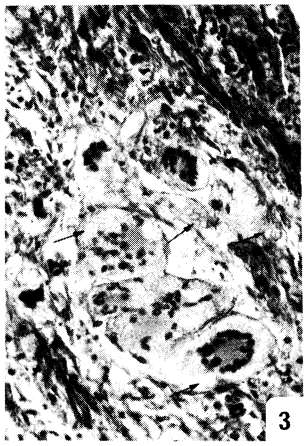

FIG. 3. Dermal foamy giant cells enclosing fungus particles (Arrows). Hematoxylin–eosin–orange, G × 625.

DISCUSSION

Observation of papillomas in *Lacerta lepida* is of interest for tumour appearance and their aetiological factor. Important size is determined by developmental exuberancy, seldom encountered elsewhere (Reichenbach-Klinke, 1977). It does not imply, however, a locally expanding malignant process, because the tumoral epithelium is strictly devoid of neoplastic character: squamous cells are well differentiated and atypicalities, such as individual keratinization, nuclear hyperplasia and hyperchromasia, are absent; in addition, they do not invade the underlying chorion. Similarly, widespread growth in four different body parts does not indicate a metastatic diffusion because the tumoral tissue is genuinely benign from a cytological standpoint. It follows that papillomas are due to a living infectious agent. The latter does not appear like a virus, the usual inclusion bodies and cell modifications being lacking. Its morphological features and its bright red staining by periodic acid-Schiff reaction indicates fungal cells, hyphae and spores, the walls of which contain large amounts of polysaccharide. Moreover, giant cells participating in the histological picture of granuloma are frequently encountered in other cutaneous fungal diseases (blastomycosis, cryptococcosis); their cytoplasm encloses similar phagocytized parasitic organisms. It follows therefore that papillomas of the eyed lizard may be attributed, in the present case, to a fungal disease involving both the dermis, where a macrophagic afflux is triggered, and the epidermal covering. This epithelium reacts against infestation by a hyperplasia of its actively dividing basal cells and by consecutive hyperkeratosis.

A long time after Blanchard (1980) demonstrated *Selenosporium* in tail papillomas of *Lacerta viridis*, we prove again fungal interference in lacertid oncogenesis. However, in the absence of other laboratory and epidemiologic data, we are still ignorant of the systematic position and inoculation modalities of this pathogenic agent.

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