

EXTERNAL NEOPLASMS IN GOATS: A CLINICOPATHOLOGICAL STUDY ON FIVE TYPES

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SUMMARY

Between November 2002 and September 2006, five types of goat neoplasms including melanoma (one case), fibroma (one case), squamous cell carcinoma (one case), fibromatous epulis (three cases) and squamous papillomas (two cases)- were recorded. All neoplasms were reported in the head and udder regions. Adult female goats with predominantly white coat were found to be the most susceptible animals. All data about case history, clinical examination, surgical management and histopathological examination were discussed.

INTRODUCTION

Neoplasia is occasionally diagnosed in goats. A survey of 800000 slaughtered goats revealed only 70 neoplasms (Bradly and Magaki, 1963)

The major neoplasms-papilloma, squamous cell carcinoma, and malignant melanoma-occur most commonly in white dairy or Angora goats with non pigmented skin exposed to strong sunlight (Matthews, 1999 and Pugh, 2002). Fibroadenoma, lymphosarcoma and adenoma were rarely diagnosed in goats (Makady et al., 1990; Guedes et al., 1998 and Kohli and Mehrjou, 1999). Some neoplasms in goats carry poor prognosis and cause severe deterioration or even death (Sockey et al., 1984 and Ramadan et al., 1988).

This study describes the surgical management and pathological findings of eight clinical cases suffering five neoplasms in goats.

MATERIALS AND METHODS

Eight goats with external tumors were admitted to the surgery clinic at Faculty of Veterinary Medicine

cine, Cairo University, between November 2002 and September 2006. These animals were of both sexes, different ages (2 days - 10 years) and different breeds.

A complete history and findings of the clinical examination were recorded for each case. Each neoplasm was examined and change in the size of the adjacent lymph nodes was noted.

Plain lateral and ventrodorsal radiographs were performed on the chest of each goat using exposure factors of 50-60 KVP, 20 mAs. The radiographs were examined for the presence of pulmonary metastasis.

Surgical excision of the neoplasms with a fair margin of normal skin was performed as usual under the effect of xylazine HCL (Rompun 2% - Bayer) at a dose of 0.1 mg/kg body weight given intramuscularly and local infiltration analgesia using lignocaine Hcl (Xylocaine Hcl 2%, Astra).

Follow-up information about the operated animals was obtained by questionnaire.

The excised neoplasms were grossly examined. Multiple specimens from each neoplasm were fixed in 10% neutral buffered formalin then exposed to ascending concentrations of ethanol for subsequent histological preparation. Sections 4-5µm in thickness were stained with hematoxyline and eosin (Carleton, 1976). Tissue section sus-

pected melanoma was stained with Masson Fontana for melanin pigment (Bancroft and Stevens, 1996).

RESULTS

In the present study, five types of external neoplasms were recorded in the head and udder regions of goats.

Evidence of metastasis was not observed in both regional lymph node and lungs in all cases. The recorded neoplasms were classified into:

Melanoma (one case)

An 8-year-old Nubian goat (predominantly white with brown patches) had a black outgrowth at the medial canthus of the left eye since six months (Fig. 1a).

Clinical examination revealed rounded, firm, black, and rough mass at the left 3rd eyelid. Apart from conjunctivitis and ocular discharge, the eye and vision appeared normal.

The size of the neoplasm was 1.5 cm x 2.5cm. Surgical excision of the neoplasm was a radical treatment without recurrence. The excised neoplasm was 10 grams and its cut section was black and fleshy.

Histopathologically, the tumor revealed benign melanoma in which the tumor cells (melanoblasts)

or macrophages) were irregularly rounded, spindle-shaped or satellite-shaped with large rounded or oval nuclei. Clumps of melanin pigment granules obscured most of these nuclei (Fig. 1b). The tumor reacted positively with Fontana stain (Fig. 1c). Few mitotic figures were also seen.

Fibroma (one case)

An aged (10-year-old) Baladi goat had an orange-sized hard swelling at the right external ear since one year (Fig. 2a). The goat had mixed coat colours (white and black). Apart from slight alopecia, the skin was normal. Surgical excision of the neoplasm was carried out (Fig. 2b) without complications or recurrence.

The excised neoplasm weighed 350 grams and its cut section was dry, white and wavy (Fig. 3a).

Histopathological examination revealed fibroma. The fibrocytes and their nuclei were spindle-shaped. Moreover collagen fibres and fibroblasts arranged in a concentric manner forming whorls around the blood vessels (Fig. 3b). Leucocytic cells infiltration mainly lymphocytes and macrophages were also noticed.

Squamous cell carcinoma (one case)

It was recorded in a 6-year-old white Baladi goat at the base of the left ear and extending to the lower eyelid (Fig. 4a). The neoplasm had a broad base, easily bled and its surface was ulcerated and covered with thick scab. Removal of the scab re-

vealed bad odour and finely villous, red, highly vascular tissue flecked with pus.

Surgical excision of the neoplasm resulted in recurrence 2 months later. The excised neoplasm weighed 150 grams and its cut section was grayish white, glistening and firm.

Microscopically, the tumor formed of large polyhedral cells similar to those of stratum spinosum of the epidermis. The dermis and subcutis were invaded by groups of the neoplastic cells. The neoplastic cells arranged in groups forming concentric laminations of dark red dense masses of keratin (cancer pearls) (Fig. 4b). The neoplasm showed fibrous stroma with leucocytic cell infiltration mostly lymphocytes. Mitotic figures and areas of hemorrhage and necrosis were also noticed.

Fibromatous epulis (three cases)

It was seen in three Baladi kids (2males and one female) of black coat. The age of the affected kids was 2-7 days. All cases had a history of oral outgrowths, malocclusion of the mouth and difficult suckling since birth. Oral examination revealed thick, rough and fissured tongue with multiple fleshy outgrowths scattered over the gum, buccal cavity and lower lip (Fig. 5a, b and c). The incisor teeth were loose. The swellings were sessile ovoid with rosy red rough surface. Surgical excisions of the large masses were performed but recurrence occurred after one month. Histopatho-

logical examination confirmed fibromatous epulis. The tumor was well-vascularized and consisted of haphazardly arranged bundles of spindle-shaped cells together with dense collagenous stroma (Fig. 5d). In addition the overlying epithelium showed marked hyperplasia (Fig. 6a) and numerous mitotic figures (Fig. 6b).

Cutaneous papillomas (two cases)

Squamous cell papillomas were recorded in two Baladi goats of 2-3 years old. One of them had

the tumors in both tips of the ears (Fig. 7a) while the other goat had the tumors at the udder (Fig. 7b). An ulcerative area and mastitis were also noticed in the affected udder. The tumors appeared as thick rough crusts and several nodules. The affected areas were depigmented and alopecic. Surgical excision of the tumors was curative without recurrence. Histopathologically, the epidermal epithelial cells showed great thickening (acanthosis) together with hyperkeratosis and parakeratosis (Fig. 8).

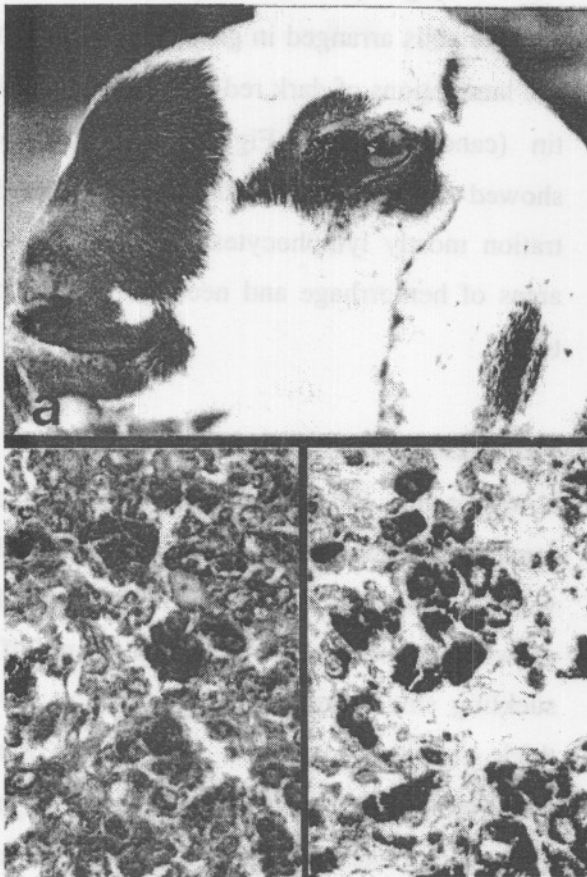


Fig. 1 (a): Melanoma at the medial canthus of the left eye of an 8-year-old Nubian goat, **(b)** Melanoma showing large tumor cells loaded with brownish black melanin pigment (H & E x 400), **(c)** Melanoma showing blackish melanin granules within melanoblasts and macrophages (Fontana stain X 400).



Fig. 2 (a): Fibroma at the right external ear of a 10-year-old Baladi goat. **(b)** The same goat post surgery.

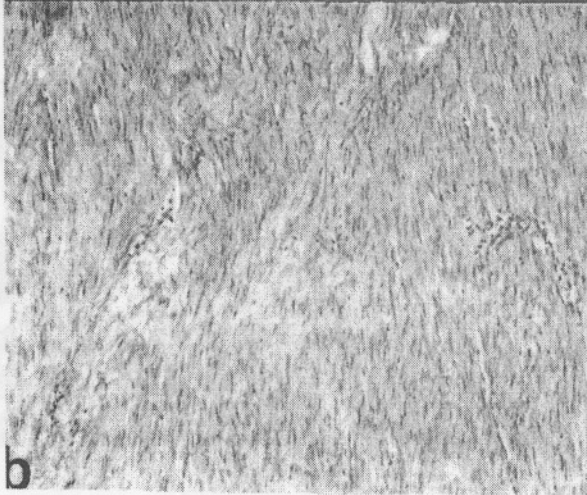
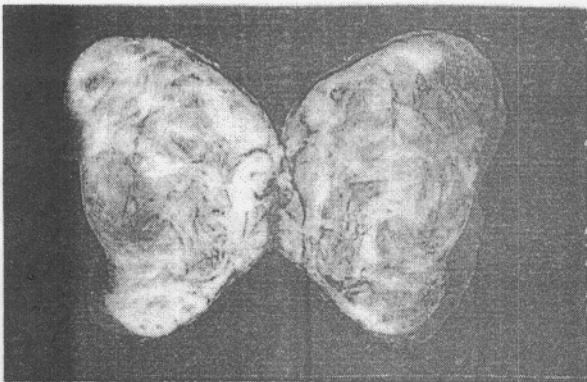


Fig. 3 (a): Cross section of the excised fibroma showing white wavy surface. **(b)** Fibroma showing fibroblasts arranged in whorls (H&E x 100).

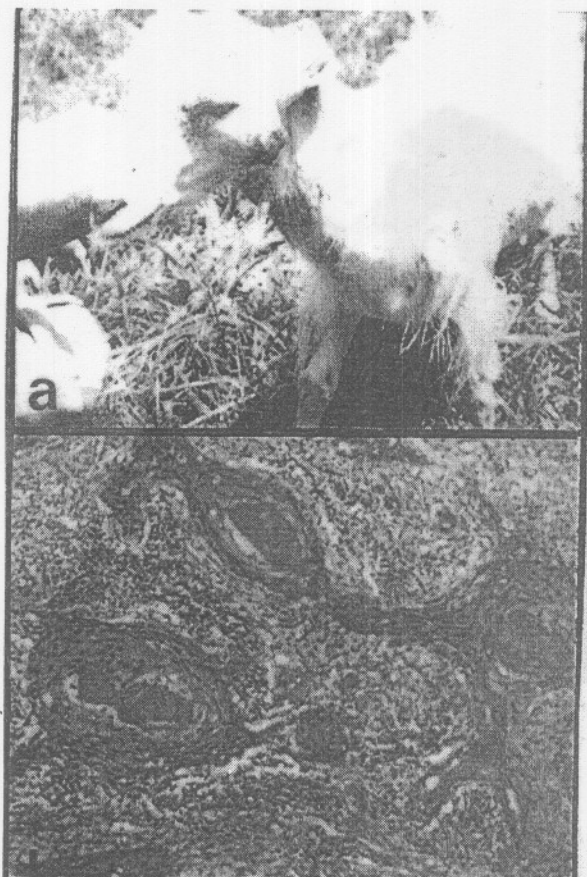


Fig. 4 (a): Squamous cell carcinoma under the base of the left ear in a 6-year-old goat. **(b)** Squamous cell carcinoma showing cell nest infiltrating the dermis and surrounded by chronic inflammatory reaction (H & E x 10)

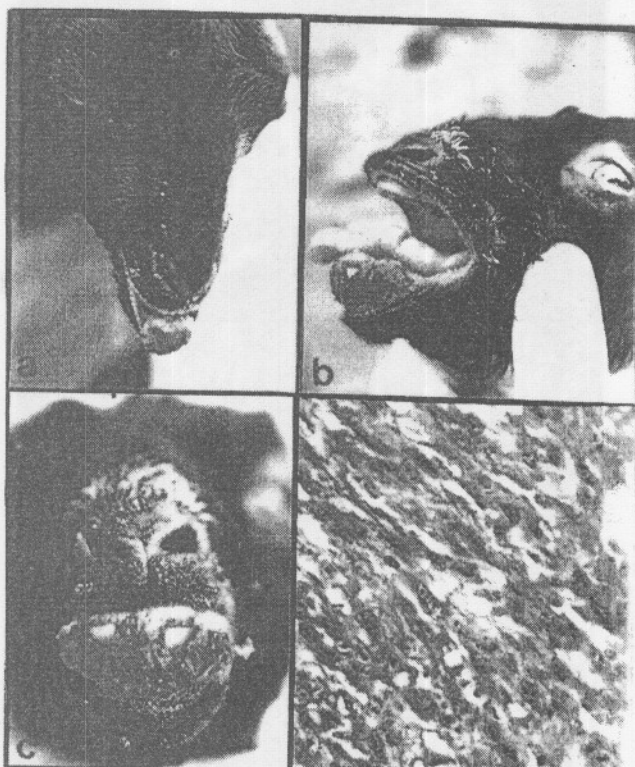


Fig. 5 : Fibromatous epulis at the lower lip of a 2-day-old kid **(a)**, at the tongue of a 5-day-old kid **(b)** and at the gum of a 7-day-old kid **(c)**. **(d)** Fibromatous epulis showing haphazardly arranged fibroblasts and collagenous stroma (H & E X 200).

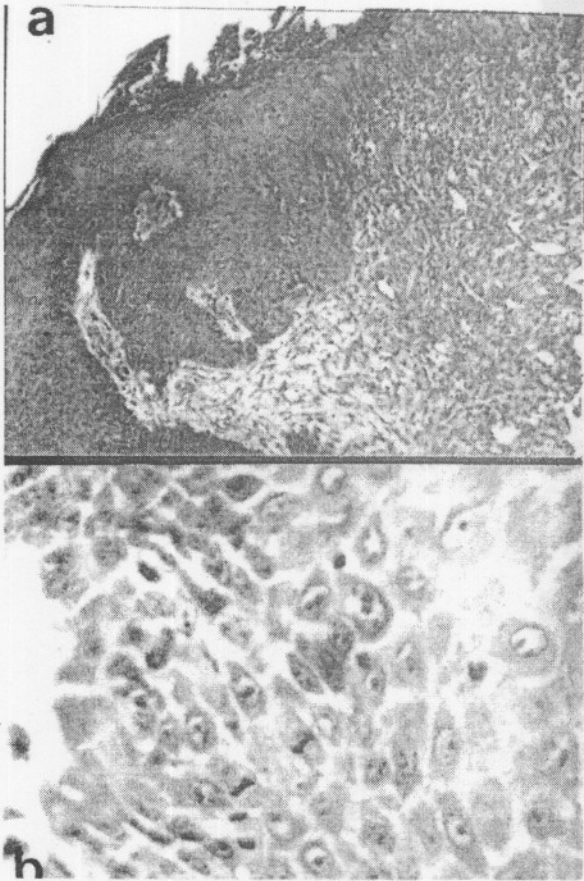


Fig. 6 (a): Fibromatous epulis showing well developed vascularity and haphazardly arranged fibrous cells (H & E x 100). **(b)** The same neoplasm showing hyperplasia and mitotic figures of the epidermal cells (H & E 400).



Fig. 7 (a): Cutaneous papillomas at both ear tips in a 2-year-old goat, **(b)** Cutaneous papillomas at the udder of a 3-year-old goat.

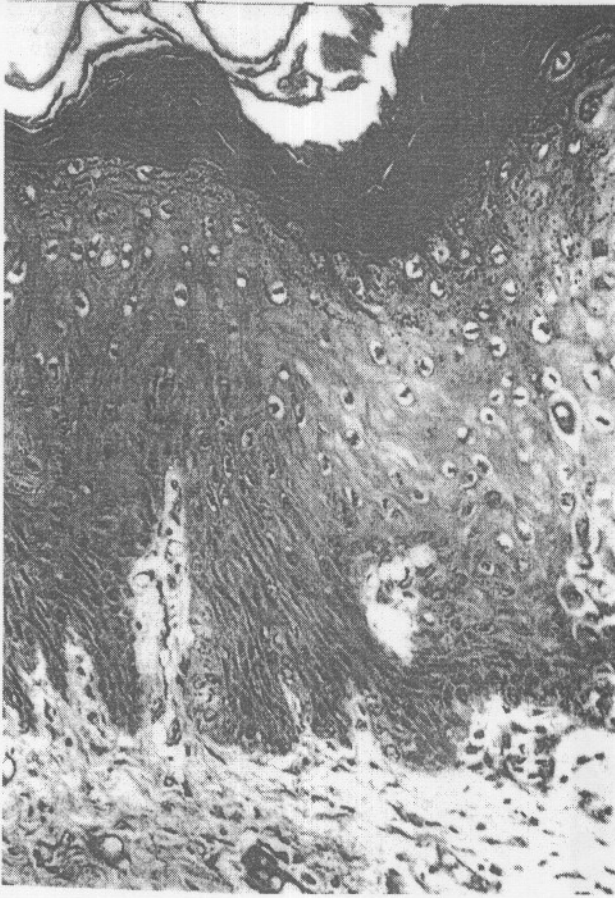


Fig. 8 : Squamous cell papilloma showing acanthosis, hyperkeratosis and parakeratosis (H & E x 200) .

DISCUSSION

The goat's neoplasms seem to depend on several factors-namely, nonpigmented skin, adult age, excessive exposure to sunlight, contact with some infective agents and exposure to inflammatory exudates, hydrocarbons and arsenical compounds (Theilen et al., 1985 and Bolbol et al., 1991).

It is interesting to note that melanoma, fibroma and squamous cell carcinoma-reported in this study-occurred in adult goats of predominantly white coats. This arises the question of the possible etiological role of the age and u/v light.

In the present study, melanoma, fibroma, squamous cell carcinoma, fibromatous epulis and cutaneous papillomas were recorded. This is in agreement with (Damodaran and Parthasarathy, 1972) who found that 90% of goats' neoplasms were of cutaneous origin especially papillomas and melanomas. Although several therapeutic methods have been used for treatment of neoplasms in domestic animals-including, radiotherapy, chemotherapy, immunotherapy, laser surgery, hyperthermia and cryosurgery (Rajguru et al., 1988 and Behery, 1992) - surgical excision was found enough in most of goats' neoplasms. The same r

sult was mentioned by (Pugh, 2002).

In the present study, most of the affected animals were females (six out of eight). This could be explained by the early slaughter of bucks.

Melanoma has an unknown incidence in goats. One survey of the skins of 23492 goats, found only two melanomas (Venkatesan et al., 1979). Another survey indicated an incidence of 0.03% cutaneous melanomas in goats (Venkatesan, 1977). In the present study, the recorded melanotic neoplasm was benign. This finding disagrees with that reported by (Ramadan et al., 1988) who mentioned that caprine melanoma is a highly malignant neoplasm with high degree of metastasis. In contrast to the findings of El-Shazly et al., (1991) who found melanomas in the perineum, vulva and udder, the recorded case was in the 3rd eyelid. The recorded melanoma was successfully excised without recurrence. In contrast, Ramadan et al., (1988) mentioned that the neoplasm carries poor prognosis and highly fatal.

It is interesting here to record a rare case of fibroma in the external ear of a goat. The neoplasm reached its large size (orange-size) after a period of one year. Due to the few reported cases of fibroma in goats, it is impossible to know whether the external ear is predisposed to tumor involvement.

Regarding squamous cell carcinoma, the neoplasm was recorded here at the base of the ear of a Baladi goat. However, it was mainly seen in Angora goats on the perineum, horn, udder, vulva and orbital cavity (Ramadan, 1975; Bolbol et al., 1991 and Pugh, 2002). The presence of cancer pearls (unique characteristic of squamous cell carcinoma) indicated a differentiated type of neoplasm.

It is worthy to record - for the first time - three cases of congenital fibromatous epulis in goat kids. The neoplasm appeared as multiple solid rosy red outgrowths protruding from the gums and extending to the tongue and lower lip. These lesions were large enough to interfere with suckling . Abd El-Aal et al., (1992) and Youssef and Ahmed (1992) recorded two cases of epulis in a buffalo and a bull resulted from continuous irritation. Microscopically, the neoplasm characterized by epithelial hyperplasia, mitotic figures and numerous blood vessels, fibroblasts and collagen fibers.

Concerning cutaneous papillomas, it was observed at the ears tips and udder as several small crusty nodules which successfully excised surgically. Theilen et al., (1985) and Makady et al. (1990) observed the same findings . Mastitis was seen in the affected udder as a result of secondary infection.

In conclusion, clinical cases of goat's neoplasms are less frequently reported in the veterinary literature. The present work records five naturally occurring neoplasms in goats.

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الأورام الخارجية فى الماعز - دراسة حقليية وباثولوجية عن خمسة أنواع

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أجريت هذه الدراسة فى الفترة من نوفمبر ٢٠٠٢ إلى سبتمبر ٢٠٠٦ على خمسة أنواع من الأورام الخارجية فى الماعز.

وقد إشتملت هذه الأورام على ورم ميلانينى (حالة)، ورم ليفى (حالة)، ورم حلیمى (حالتين)، سرطان حرشفى الخلايا (حالة) وورم ليفى فى اللثة (٢ حالات). وقد سجلت هذه الأورام فى منطقتى الرأس والضرع.

وقد وجد أن أناث الماعز ذات الأعمار الكبيرة والغطاء الأبيض هى الأكثر إصابة بهذه الأورام.

وهذا وقد تم تسجيل كل البيانات عن كل حالة مشتملة على وصف الحيوان وتاريخ الحالة ونتائج الفحوص الحقلية والنسجية والتدخلات الجراحية.