Equine Skin Neoplasms:
Surgical and Histopathological Studies

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Introduction

• The skin is a complex organ having many important physiological functions, and its diseased conditions are of clinical, economical and pathological implications.

• In equine practice, the incidence of skin neoplasms is relatively high making animals less productive or potentially life threatening (Abdel-Hamid et al., 1990, Abd El-Maboud et al., 1994 and Karrouf et al., 2002)
Introduction

• Many equine skin neoplasms were recorded including, sarcoid, squamous cell carcinoma, melanoma, melanosarcoma, papilloma, fibroma, fibromyxoma, hemangiosarcoma and cutaneous lymphangioma.

• Several modalities have been used in the treatment of equine skin neoplasms including; surgical excision, radiotherapy, chemotherapy, cryosurgery, laser therapy, immunotherapy and tumor suppress genes.
The aim of the study

The present study describes the surgical and histopathological findings of ten types of equine skin neoplasms.
Material and Methods

Animals

21 Donkeys
19 Horses
One Mule

The study was carried out on 41 clinical cases
Material and Methods

Places of the study

- Surgery Clinic at Fac. of Vet. Med., Cairo Univ.
- Al-Zahraa Arab Horse Stud
- Al-Gizera Sporting Club
- Two Private Stables at Fayoum Province
Material and Methods

• All data concerning the case history, findings of physical examination and findings of special examination of the neoplasms were collected.

• Excisional and incisional biopsies were performed under light narcosis achieved by chloral hydrate (4gm/50kg B. Wt., 10% solution, I/V).
Material and Methods

• Surgical interferences of the operable cases were done under the effect of deep chloral hydrate narcosis (5gm/50 kg B. Wt.) together with local infiltration analgesia using xylocaine HCl solution.

• Follow up of the operated cases was done for 6 months postoperative.
Material and Methods

• For histopathological examination, specimens from the excised neoplasms and biopsies were fixed in 10% buffered neutral formalin solution, prepared as usual (Bancroft et al., 1996) and stained by hematoxylin and eosin.

• Special stains were applied as Fontana for melanin pigment, Gram’s stain for suspected bacteria and periodic acid Schiff’s for mucin.
Results

• The age of the affected animals ranged between 3-13 years old.
• Males were more affected than females (23:18)
• Five animals were racing horses while the others were draught.
• Significant secondary health abnormalities of the neoplasms were not observed in 37 cases representing 90.2% of the total examined animals.
• No recurrence was observed in 26 operated cases representing 63.4% of the total examined animals.
Table (1): Distribution of the recorded equine skin neoplasms according to different body regions

<table>
<thead>
<tr>
<th>Body region</th>
<th>Horses</th>
<th>Donkeys</th>
<th>Mules</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Limbs</td>
<td>8</td>
<td>3</td>
<td>-</td>
<td>11</td>
</tr>
<tr>
<td>Head</td>
<td>5</td>
<td>4</td>
<td>-</td>
<td>9</td>
</tr>
<tr>
<td>Udder/vulva</td>
<td>3</td>
<td>5</td>
<td>-</td>
<td>8</td>
</tr>
<tr>
<td>Prepuce/Scrotum</td>
<td>-</td>
<td>5</td>
<td>-</td>
<td>5</td>
</tr>
<tr>
<td>Neck</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Abdomen</td>
<td>-</td>
<td>3</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td>Tail</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>19</td>
<td>21</td>
<td>1</td>
<td>41</td>
</tr>
</tbody>
</table>
Results

The recorded neoplasms

Epidermal Neoplasms (13 cases) including:
- Squamous cell papillomas (4)
- Squamous cell carcinomas (3)
- Fibropapillomas (2)
- Melanoma (2)
- Melanosarcoma (2)

Dermal Neoplasms (28 cases) including:
- Equine sarcoids (21 cases)
- Fibroma (3)
- Fibromyxoma (2)
- Fibrosarcoma (one)
- Hemangioma (one)
Fig. (1): (a) Squamous cell papillomas on the upper lip of a 3-year-old stallion.
(b) The epidermal layers showing acanthosis, parakeratosis and hyperkeratosis.
Fig. (2): (a) Squamous cell papilloma showing ballooning degeneration of keratinocytes and clumping of keratohyaline granules.
(b) Pustular dermatitis with diffuse infiltration of large number of neutrophils.
Fig. (3): (a&b) Fibropapilloma in the mandibular region of two 5-year-old donkeys. (c) Note, epidermal hyperplasia, branching of epidermal ridges and fibromatosis of dermal layer. (d) The epidermal cell layers showing clear acanthosis and hyperkeratosis
Fig. (4): (a) Squamous cell carcinoma at the left vulvar lip in an 8-year-old mare showing ulcerated surface. (b) The dermal layer showing cell nest.
Fig. (5): (a) Prepeutial squamous cell carcinoma in a 7-year-old donkey showing cauliflower-ulcerating masses. (b) The dermal layer showing pyogranuloma containing esinophylic bodies and colonies of bacteria.
Fig. (6): (a) Melanosarcoma in a 7-year-old mare showing nodular, hyperpigmented and ulcerated growths on the tail and perineal area.
(b) Pleomorphic, pigment land cells with few mitotic figures.
Fig. (7): Nodular sarcoids at the scrotum of a 5-year-old donkey showing firm, pedunculated and ulcerated growths.
Fig. (8):(a) Nodular sarcoids at the udder of a 4-year-old she-donkey showing firm, pedunculated and ulcerated growths. (b) Note, dilation of the blood capillaries, fibrous connective tissue proliferation and leucoytic infiltration.
Fig. (9): (a) Verrucous sarcoids in a 3-year-old donkey. 
(b) The same animal ten days postoperative.
Fig. (10):(a) Fibroplastic sarcoids at the right hind canon in a 7-year-old donkey.
(b) Note, the variable amounts of dermal collagen fibers and fibroblasts in whorled pattern.
Fig. (11): (a) Fibroma at the left hind canon in a 12-year-old stallion.  
(b) Note, whorled and interlacing bundles of fibroblasts and collagen fibers.
Fig. (12): (a) Fibromyxoma at the planter aspect of left hind canon in an 8-year-old mare.
(b) Note, pale staining areas of oval, satellite or round cells with long branching and widely separated by bluish matrix.
Fig. (13):(a\&b) Bilateral peri-ocular fibrosarcoma in a 6-year-old stallion showing ulcerated, circumscribed fleshy masses.
(c) Note, sloughing of epidermal layer with hemorrhage and leucocytic infiltration of the underline connective tissue.
(d) Note, interwoven bundles of immature atypical fibroblasts and collagen fibers.
Fig. (14): (a) Supraorbital hemangiomma in a 3-year-old donkey showing bluish black, lemon-sized swelling. (b) The same animal after surgery. (c) Note, the large number of capillaries lined with swollen endothelial cells in the dermal layer.
Conclusions

• Equine skin neoplasms were common in adult ages.
• Limbs and head were the most common sites of skin neoplasms in equine.
• Equine sarcoids, squamous cell papilloma, squamous cell carcinoma and fibromas were the most common skin neoplasms.
Conclusions

• Fibropapilloma, melanoma, fibromyxoma, melanosarcoma, fibrosarcoma, and hemangioma were also recorded in equine.

• Clinical examination can give a tentative diagnosis of equine skin neoplasms and histopathological examination is still a confirmatory aid.

• Surgical interference was found to be helpful in treatment of most skin neoplasms in equine.
Thank YOU