

Latin Comparative Pathology Group

The Latin Subdivision of the CL Davis Foundation

Diagnostic Exercise

Case #: 43 Month: April Year: 2014

Answer Sheet

Contributor: Ana Alcaraz from CVM Western University of Health Sciences, Pomona CA 91766.

Clinical History: 13-year-old quarter/paint mare used for recreational riding. The horse has lived in California all her life. In September 2013 a small nodule was noticed in her left eye (Fig. 1). The owner reported progressive growth so a biopsy was taken (Fig. 2 through 4).



Fig 1 (left). Left eye. 0.7 cm nodule. **Fig 2 (right).** Subgross image, H&E stain. 2mm biopsy sample.

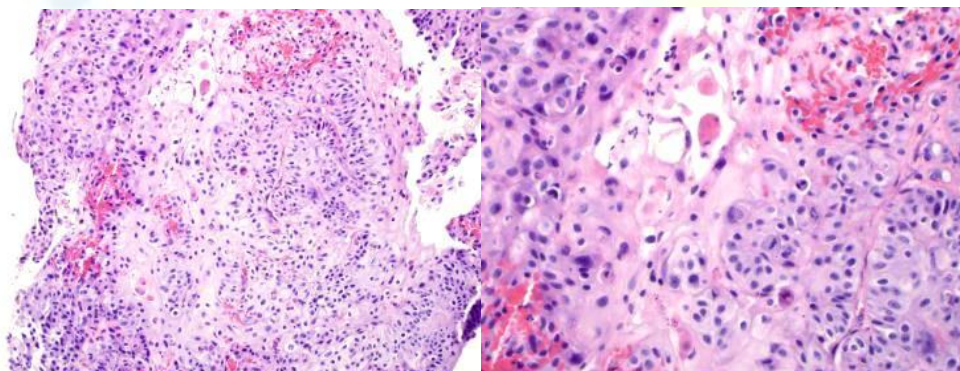


Fig 3 (left). 20x H&E stain. **Fig 4 (right).** 40x H&E stain.



Fig 5 (left). After 6 months, the mass was 3 x 1 cm in size protruding and covering the cornea. **Fig 6 (right).** Second biopsy (enucleated eye). Sub gross picture of the histopathology of the affected eye.

Follow-up questions: Description (1) and morphologic diagnosis (2).

Typical Gross findings:

Left eye: There is a 0.7 cm, well demarcated, pink mass with irregular surface. The mass bulges from the cornea, partially effacing the medial limbus.

Typical microscopic findings:

Eye mass: The mass is composed of numerous, variably sized, small nests and cords of tightly packed stratified epithelial cells with faint cell borders. The neoplastic cells have moderate amounts of pale eosinophilic cytoplasm with a central, round to oval nucleus. The nests and cords are supported by a fine fibrovascular connective tissue stroma (Fig 3-4). An average of two mitotic figures is seen per 10 high power fields (40X). There is mild anisokaryosis and anisocytosis. Occasionally, the larger nests show central areas of intensely eosinophilic keratinized cells. In addition, scattered individual neoplastic cells are seen. The neoplastic cells extend to the margins of the sample submitted. The second biopsy had similar histopathological findings so the diagnosis of squamous cell carcinoma remained unchanged.

Discussion: In horses, squamous cell carcinoma (SCC) is one of the most common neoplastic ocular tumors. In one study of almost 300 neoplasms (of any kind), 20% were SCC and of those 40% were found in the head, eye and ocular adnexa. The most frequent locations in the eye of horses affected by SCC are the nictitating membrane (most

common) and bulbar and palpebral conjunctiva. SCC usually present unilaterally. Metastasis is rare, but it has been reported to the regional lymph nodes and salivary glands and is more common with poorly differentiated SCC. Surgical excision of the ocular SCC is successful if combined with other treatments such as local chemotherapy, cryotherapy or hyperthermia therapy. Horses older than 8-10 years seem to be affected more frequently than younger horses. Solar radiation, non-pigmented ocular adnexa, white vs. non-white periocular hair coat, viruses, and hormonal, genetic and immunologic factors have all been considered as predisposing factors. Of note, non-pigmented haired skin is considered a major risk factor. In this case the affected eye has white periocular hair coat (Fig 5) and the animal has lived in California all her life (i.e. high UV exposure). Following enucleation and the diagnosis, the animal received antineoplastic chemotherapy. Almost one year after the diagnosis, the animal has no evidence of reoccurrence or metastasis.

References:

- 1.- Straffuss, A. C. "Squamous cell carcinoma in horses." *Journal of the American Veterinary Medical Association* 168.1 (1976): 61-62.
2. Dugan, S. J., et al. "Epidemiologic study of ocular/adnexal squamous cell carcinoma in horses." *Journal of the American Veterinary Medical Association* 198.2 (1991): 251-256.
3. Schwink, K. "Factors influencing morbidity and outcome of equine ocular squamous cell carcinoma." *Equine veterinary journal* 19.3 (1987): 198-200.
4. Gelatt, K. N., et al. "Conjunctival squamous cell carcinoma in the horse." *Journal of the American Veterinary Medical Association* 165.7 (1974): 617-620.
5. Dugan, S. J., et al. "Prognostic factors and survival of horses with ocular/adnexal squamous cell carcinoma: 147 cases (1978-1988)." *Journal of the American Veterinary Medical Association* 198.2 (1991): 298-303.
6. Mosunic, Cory B., et al. "Effects of treatment with and without adjuvant radiation therapy on recurrence of ocular and adnexal squamous cell carcinoma in horses: 157 cases (1985-2002)." *Journal of the American Veterinary Medical Association* 225.11 (2004): 1733-1738.

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