**SQUAMOUS CELL CARCINOMA – THIRD EYELID REMOVAL**

Neoplasms of the upper and lower lids and nictitating membrane (third eyelid) include squamous cell carcinoma (SCC) or ‘cancer eye’, and rarely other tumours such as papillomata, and fibrosarcoma. SCC is most significant in terms not only of incidence but also of economic importance and prognosis. SCC occurs more frequently on the globe (65%) than upper and lower lids (30%) or third eyelid (5%), is very invasive locally, and may metastasise to the local lymph nodes (parotid, atlantal or retropharyngeal and the anterior cervical chain).

**Clinical signs**

SCC is largely confined to Hereford and Simmental breeds and their crosses, where the non-pigmented area is liable to develop neoplastic lesions under the influence of ultraviolet radiation from sunlight. Affected cattle are usually four to nine years old. About 85% of cattle with SCC lack pigment in the affected area. The lesion is often an obvious proliferative irregular mass which may ulcerate through the skin to cause moderate distress and blepharospasm.

Early lesions appear either as rice-grain-like plaques on the sclera or corneal surface, or as small firm nodules in the dermis. This precursor of a greyish-white plaque at the nasal and temporal limbus develops into a papilloma and carcinoma *in situ*. Lid lesions often start as a dirty brown, horn-like keratomata. At first, most areas of squamous cell carcinoma around the eye appear as small, white bumps or wart-like lesions. These often progress into more malignant tumors that appear pink and often ulcerated. These tumors can be almost any size and often invade the eye structures and surrounding bone and tissues. If left long enough, the tumor will spread to other areas of the body.

 Cancer eye in cattle is directly related to skin color and sun exposure. Tumors develop when light coloured areas of skin around the eye are exposed to excessive sunlight. Cattle with white faces and light skin pigments around the eyes are very susceptible to this type of cancer. The most common treatment is complete removal of the eye and surrounding tissues. Most animals with confirmed cases of cancer eye should be culled.

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| http://www.infovets.com/books/dairy/F/Images/F220-09.jpg |  |  |

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| Figure #12: The black arrow points to an area of squamous cell carcinoma on the inside corner of this eye. |

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| http://www.infovets.com/books/dairy/F/Images/F220-09-02.jpg |  |  |

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| Figure #13: This eye also has an area of squamous cell carcinoma on the inside corner of the eye. |

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**Treatment**

Treatment is indicated in early lesions without evidence of secondary spread to adjacent structures (e.g. bone) or metastases to the drainage lymph nodes.

Several techniques are available and include:

1. excisional surgery
2. cryotherapy
3. hyperthermia
4. radiotherapy (rare)
5. immunotherapy (rare)
6. combinations of a+b, a+d or c+e

**Excisional surgery of third eyelid**

* in standing or recumbent animal induce analgesia by local infiltration (5 ml of 2% lignocaine) of base of eyelid after instilling topical anaesthetic solution (e.g. 0.5% proparacaine) into conjunctival sac
* draw third eyelid out by traction with forceps
* excise eyelid deep to cartilage with curved scissors
* control haemorrhage with adrenaline-soaked swab, or cryotherapy

**Cryotherapy**

Cryotherapy is particularly advantageous since the technique avoids haemorrhage and is simple and relatively fast. The small liquid nitrogen flask (Nitrospray® [Arnolds]) is adequate for lesions up to 5 cm diameter and 1 cm deep.

* protect eye from inadvertent freezing by inserting ‘Styrofoam’ strips or acrylic between lid and corneal surface. Apply water-soluble lubricants or vaseline to skin of surrounding healthy area
* clip and wash affected area and put on disposable rubber gloves
* freeze the area twice (liquid nitrogen) or three times (nitrous oxide, carbon dioxide) initially using a spray tip
* include at least 5 mm width border of clinically healthy tissue
* evert tissue lying close to cornea by grasping with towel clips or Allis tissue forceps, before applying probe head which is designed to deal with lesions of the third eyelid
* use thermocouples if available, inserting points 5 mm from margin of lesion and stopping freeze when they indicate a temperature drop below−20°C

Advantages of cryotherapy over knife surgery in treatment of SCC are:

* simple, cheap and rapid method
* good post-operative analgesia
* minimal pre-operative preparation and usually no post-operative medication necessary
* procedure may be repeated if there are multiple lesions
* no bleeding

Disadvantages of cryotherapy are:

* lesions > 2.5 cm diameter require relatively prolonged application of probe head for complete iceball formation
* lesions exceeding 5 cm must be treated in two stages, alternatively an initial surgical debulking procedure
* initial instrumentation cost is high, but treatment cost per lesion is then low

Other techniques:

* excisional surgery: often indicated in large lesions to reduce size (‘debulk’) prior to cryotherapy
* radio frequency hyperthermia: application of heat (50°C for 30 seconds) to various surface points of tumour and surrounding skin using probe head. Penetration is limited to 0.5–1 cm, therefore inappropriate for large masses
* radio therapy: radon and gold seed implants have both been successfully used in valuable cattle. Penetration is again only 0.5–1 cm
* immunotherapy: local infiltration of mycobacterial cell wall fraction immunostimulant (Regressin®[Ragland], USDA-approved drug for immunotherapy). Dose rate is 0.5 ml for each centimetre of tumour diameter, i.e. 5 cm diameter mass is given 2.5 ml. It is claimed that untreated sites often undergo spontaneous regression
* Prognosis: recurrence possible