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TREATMENT OF CUTANEOUS SQUAMOUS CELL CARCINOMA ON THE HEAD REGION WITH ELECTROCHEMOTERAPY IN A GROUP OF 19 CATS

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Cutaneous squamous cell carcinoma (SCC) accounts for 10% of all feline cutaneous tumours, and it is the third most common malignancy in cats. [1] SCC is locally invasive with rare metastasis to the regional lymph nodes. [2] Standard treatment approaches include surgery and radiation therapy. [1,2] Electrochemotherapy (ECT) uses the application of electric pulses combined with chemotherapeutic drugs (bleomycin) causing cytotoxic effects on the treated area. ECT also influences the immune system and tumour blood flow. [2,3] The aim was to evaluate the feasibility and efficacy of ECT in the treatment of SCC on the head. Nineteen cats were retrospectively enrolled (December 2004-March 2019). SCCs were diagnosed with cytology and/or histology. ECT was combined with IV bleomycin (15000 UI/ m2) alone in 16/19 cases, post-surgery in 2/19, and before surgery in one case. Parameters considered were tumour site and size, electroporation parameters, response rate (response complete [CR] or partial [PR], stable disease [SD]), local recurrence rate (RR), disease-free interval (DFI), survival time, median survival time (MST), treatment outcome and local treatment toxicity (6-point scale). [4] Tumours were mostly located on the nasal planum (14/19). Median tumour size was 0.7 cm. Three different electroporators were used: Cytopulse Oncovet (12/19), Leroy Biotech Electrovet S13 (6/19) and Cliniporator, IGEA (1/19). Electroporation frequencies were 1 Hz or 5kHz and pulse amplitude to electric distance ratio was ranging 1000, 1200 or 1300 V/cm. Response rate was 94.7% (18/19; 13 CR and 5 PR). One cat had SD. Additional ECT was performed for 7 cats; 4 had a 2nd ECT, one a 3rd ECT and two a 4th ECT. For two cats with PR, RR was 10.5%, DFI was 44 and 694 days and survival time was 184 and 751 days respectively. MST for cats with recurrence was 467 days. At the end of the observation period 14 cats died and 5 were still alive. MST for cats dead without tumour (n=8) was 520 days and for cats dead with tumour (n=5) was 228 days. One cat with SD died with tumour 9 days after ECT. Treatment toxicity was ≤2 in 15/19 cases, two cats experienced toxicity score 3 and one each toxicity scores 4 and 5. Two cats were FIV+ and required multiple ECTs (PR), they had recurrence and no further response to treatment after the 4th ECT. All cats with tumours <1 cm achieved CR. A possible reduction of the treatment response in FIV + cats was noticed. However, ECT seems to be a good alternative to excisional surgery, especially in smaller tumours. Treatment toxicity was low and survival time considerably long.

[1] Hauck ML. Tumors of the Skin and Subcutaneous Tissues. In: Withrow & MacEwen's Small Animal Clinical Oncology. 5th ed. Elsevier saunders. [2] Tozon et al. Electrochemotherapy with intravenous bleomycin injection: An observational study in superficial squamous cell carcinoma in cats, J Feline Med Surg, 16(4):291-299, 2014. [3] Čemažar et al. Electrochemotherapy in veterinary oncology, J Vet Intern Med, 22(4):826-831, 2008. [4] Lowe et al. The treatment of canine mast cell tumours with electrochemotherapy with or without surgical excision, Vet Comp Oncol, 15(3):775-784, 2017.