

## RETROSPECTIVE STUDY OF CUTANEOUS TUMOURS IN DOGS IN SRI LANKA

H.H.E. Abeywardena<sup>1</sup>, K.L.T.D. Jayawardena<sup>1</sup>, I.N.A. Wickramasinghe<sup>1</sup>,  
D.D.N. De Silva<sup>2</sup> and G.S.P. De S. Gunewardena<sup>1</sup>

<sup>1</sup>*Department of Veterinary Pathobiology and* <sup>2</sup>*Department of Veterinary Clinical Sciences, Faculty of Veterinary Medicine and Animal Science, University of Peradeniya*

### Introduction

The skin is continuously exposed to a wide range of carcinogens including chemical, physical and other environmental irritants, and therefore, skin tumours are the most commonly found neoplasms in animals. Approximately 30% of all tumours in dogs are reported to originate from the skin (Kaldrymidou *et al.*, 2002). As revealed by past records, the number of dog skin biopsy specimens received by the histopathology laboratory of the Faculty of Veterinary Medicine and Animal Science (FVMAS) has increased during the last few years. With the increase in the corresponding number of clinical cases with cutaneous neoplasms, new protocols for the management and treatment of these tumours need to be introduced.

Classification of cutaneous tumours based on the recent WHO standards is a prerequisite for accurate diagnosis which may provide an appropriate therapeutic and prognostic approach to the disease (Pakhrin *et al.*, 2007). Therefore, retrospective analysis and reclassification of cutaneous tumours according to the WHO standards is a timely need. The present study is based on retrospective analysis of surgical biopsies and necropsy samples of cutaneous neoplasms in dogs submitted to the Division of

Veterinary Pathology at the FVMAS from January 2004 to August 2009.

### Materials and Methods

#### *Study materials*

A total of 102 biopsy and necropsy specimens from dogs with neoplastic diseases were received. Out of these, 49 cases were diagnosed as cutaneous neoplasm and were analysed in this study. Most of those samples were received from the Veterinary Teaching Hospital of the FVMAS.

#### *Histopathological examination*

All the tissue specimens were fixed in 10% formal saline for histopathological examination, processed using a tissue processor and embedded in paraffin wax. The paraffin embedded tissues were sectioned at 4 $\mu$  on a microtome, stained with haematoxylin and eosin (H&E) and examined under a light microscope (4x, 10x, 40x and 100x magnifications) for histopathological changes. Special stains including toluidine blue were used on selected tissue sections.

#### *Histological classification*

The tumours that were diagnosed as being of cutaneous origin were histopathologically classified according to WHO standards (Monier and Mohamed Sharif, 2006). They

were initially categorized into two major groups namely, epithelial and melanocytic tumours and mesenchymal tumours based on the tissue of origin. Categorization based on individual cell of origin viz., round cells and spindle cells was also attempted on sufficiently differentiated tumours. The tumours were further classified as benign or malignant according to histological characteristics such as the mitotic index and degree of cellular and nuclear atypia (Vail and Withrow, 2001).

**Results**

Of the 102 dog cases examined, 49 (48.0%) were diagnosed as cutaneous

tumours. Twenty seven (55.1%) of the cutaneous tumours were of mesenchymal type (Table 1) and the remaining 22 (44.9%) were diagnosed as those of epithelial and melanocytic tumours (Table 2).

Among the mesenchymal tumours of the skin, fibrosarcoma, lymphoma and histiocytic tumours were the most frequent (18.5%) followed by fibroma (14.8%), and mast cell, spindle cell and round cell tumours (7.4%). Myxosarcoma (3.7%) and adenocarcinoma (3.7%) were the least common types of mesenchymal tumours found in this study.

**Table 1: Incidence of mesenchymal tumours of the skin in dogs**

Tumour type	Total number	% Mesenchymal (n=27)	% Cutaneous (n=49)
Fibrosarcoma	5	18.5	10.2
Lipoma	5	18.5	10.2
Histiocytic tumours	5	18.5	10.2
Fibroma	4	14.8	8.2
Mast cell tumors	2	7.4	4.1
Spindle cell tumors	2	7.4	4.1
Round cell tumor	2	7.4	4.1
Myxosarcoma	1	3.7	2.0
Adenocarcinoma	1	3.7	2.0
Total	27	100.0	55.1

**Table 2: Incidence of epithelial and melanocytic tumours of the skin in dogs**

Tumour type	Total number	% Epithelial (n=22)	% Cutaneous (n=49)
Basal cell tumour	5	22.7	10.2
Perianal gland adenoma	5	22.7	10.2
Squamous cell carcinoma	4	18.2	8.2
Melanoma	4	18.2	8.2
Sweat gland adenocarcinoma	3	13.6	6.1
Sebaceous gland tumours	1	4.5	2.0
Total	22	100.0	44.9

Similarly, basal cell tumour and perianal gland adenoma (22.7%), squamous cell carcinoma and melanoma (18.2%) and sweat gland adenocarcinoma (13.6%) were the most frequent among the epithelial and melanocytic cutaneous tumour types

### Discussion

The majority (55.1%) of the canine cutaneous tumours diagnosed during the present study period were mesenchymal in origin. Among them fibrosarcoma, lipoma and histiocytoma were the most common. Common sites of fibrosarcomas were the skin and subcutis of the trunk and extremities, and the oral and nasal cavities of dogs. They demonstrate rapid infiltrative growth and often recur after surgical removal, but metastasis occurs in less than one-fourth of the cases (Moulton, 1990).

Lipomas are single or multiple benign tumours often found in subcutis of the lateral and ventral thorax, abdomen and upper hind limbs and forelimbs and they are characterized by slow growth, usually over a longer period of time. They too do not recur after complete surgical excision (Moulton, 1990). Histiocytoma were the next most frequent mesenchymal type of cutaneous tumours found in dogs. It is a benign tumour and does not metastasize and probably the great majority of tumours will spontaneously regress (Moulton, 1990).

As for epithelial tumours, perianal gland adenomas (22.7%), basal cell tumour (22.7%), are the most common tumours of epithelial origin. Most

perianal gland tumours are benign and recurrence is uncommon after surgical removal. Basal cell tumours are benign in almost all aspects and they are usually slow growing, non invasive and often encapsulated.

### References

- Kaldrymidou, H., Leontides, L., Koutinas, A.F., Saridomichelakis, M.N. and Karayannopoulou, M. (2002) Prevalence, distribution and factors associated with the presence and the potential for malignancy of cutaneous neoplasms in 174 dogs admitted to a clinic in northern Greece. *Journal of the Veterinary Medical Association, Physiology Pathology and Clinical Medicine*, 49: 87-91.
- Monier, A. and Mohamed Sharif (2006). *Epidemiology of skin tumor entities according to the new WHO classification in dogs and cats*, VVB Lauferweiler verlag, Giessen, Germany.
- Moulton, E.J. (1990) *Tumors in Domestic Animals*, University of California Press, Berkeley, Los Angeles and London.
- Pakhrin, B., Kang, M., Bae, H., Park, M.S., Jee, H., You, M.H., Kim J.H., Yoon B., Choi Y.K. and Kim, D.Y. (2007) Retrospective study of canine cutaneous tumors in Korea. *Journal of Veterinary Science*, 8:(3), 229-236.
- Vail, D.M. and Withrow, S.J. (2001) Tumours of the skin and subcutaneous tissues. In: Withrow S.J., MacEwen E.G. (eds.). *Small Animal Clinical Oncology*. 3rd ed. Pp. 233-260, Saunders, Philadelphia.