Comparison of histological staining patterns between canine cutaneous mast cell tumours and the local lymph node as a prognostic indicator

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Clinical staging and treatment of canine cutaneous mast cell tumours (MCTs) usually involves physical and cytological assessment of the local lymph node (LN). The LN is often removed as part of surgical treatment if evidence of possible metastasis is present. This study compared the histological staining patterns of primary MCTs from 15 dogs and the associated LN, where microscopic metastatic disease was present. Cases were obtained from the database of the Pathology Unit, Department of Veterinary Medicine, University of Cambridge. Samples of the primary MCTs and LNs were stained with Toluidine blue, Astra Blue and probed for AgNOR and c-KIT

staining patterns. Staining patterns of the primary tumour and lymph nodes were compared and characterised into groups. Follow up for 14 out of 15 dogs was possible and the time between case sample submission and date of death was calculated, ranging from 29 to 1817 days. Type of treatment following surgical removal was unknown for all cases. Cases with reduced Toluidine blue staining intensity in the MCT than the LN had a lower median survival (141, interquartile range (IQR) = 254) when compared with cases that had either no difference or increased MCT staining intensity (479.5, IQR = 1183 and 470, IQR = 1294 respectively). There were no significant differences in median survival time associated with comparison of Astra Blue staining pattern. Cases with higher AgNOR averages in the MCT had a lower median survival time (303, IQR = 366) compared with cases with lower AgNOR averages in the MCT (511.5, IQR = 956.5). Changes in c-KIT staining pattern between the MCT and LN resulted in a lower median survival time (109, IQR = 1568) compared with those that had no difference in c-KIT staining pattern (303, IQR = 833.5). These results suggest that differences in histological staining pattern between MCTs and LNs could be associated with median survival and as such could be used as a quick, inexpensive and practical alternative prognostic indicator. Due to the relatively small case size, further study is required to establish a significant association between changes in histological staining pattern between MCT and LNs and prognosis.