THE COMPLETE BLOOD COUNT AND CANINE MAST CELL TUMOR. A RETROSPECTIVE SURVEY IN A VETERINARY TEACHING HOSPITAL IN TUSCANY, ITALY

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Complete blood count (CBC) modifications in canine mast cell tumor (cMCT) are described in dogs showing bone marrow involvement. However, few data are available for dogs affected by MCT in other stages than stage IV MCTs [1-2].
The aims of this study were: 1- to investigate the frequency of cMCT in a Veterinary Teaching Hospital (VTH) of Tuscany, Italy; 2- to assess if breed, gender and sexual status were associated with the frequency of cMCT; 3- to evaluate the association between each CBC parameters and clinical variables in cMCT.
Dogs with cyto/histological diagnosis of cutaneous MCT were enrolled. All dogs were staged with abdominal ultrasound and 3-view chest X-rays. Fine-needle biopsy of the regional lymph node (LN) was performed if LN was palpable or seen at ultrasonography. Fine-needle biopsy of liver and spleen was performed in high-risk MCT (relapsing MCT, inguinal/perineal MCT, large or ulcerated MCT, Patnaik GIII or Kiupel high-grade MCT, presence of nodal metastasis), and if ultrasonography alterations were detected or if requested by clinicians. Bone marrow cytology was performed in IV-stage MCT and if severe peripheral blood cytopenia was found. To investigate frequency of cMCT, dogs with MCT have been selected from our VTH database. To assess breed, gender and sexual status specific frequencies in cMCT, Odds Ratio (OR) with matched dogs without MCT (n. 13,077) in our VTH database has been performed. Dogs were divided in these subgroups: neutered (30)/intact (68), male (47)/female (51), age based on the 25th-, 50th- and 75th-percentile, presence of ulceration (15/89), occurrence of LN (28/88), occurence of visceral metastasis (12/88), and clinical stage (5 stage 0, 26 stage I, 8 stage II, 37 stage III, 12 stage IV). Each single parameter of CBC was used as an independent variable and analyzed statistically for each subgroup of dogs (t-student or if appropriate Mann-Whitney and Kruskal-Wallis tests).
Frequency of cMCT was 0.77% (98/13,175). Among purebreds, Boxer (OR 7.2), Pitt Bull (OR 5.4), French Bulldog (OR 4.4) and Labrador Retriever (OR 2.6) were considered the most predominant. Neutered dogs were also predominant compared to intact dogs (OR 2.1). Up to 67% (66/98) patients had CBC results in the reference ranges. The most common CBC abnormalities were anemia (25%) and leukocytosis/penia (17%). Any hematological abnormalities were not significantly different when analyzed for sex, age, presence of ulceration, occurrence of lymph node or visceral metastasis, and clinical stage.
These findings suggest that some breeds and the neutered status could be at increased frequency for cMCT. As all dogs came from a small area of Italy, a comprehensive examination of inbreeding and gene code associated with cMCT development could suggest a genetic predisposition. As reported in the literature, many dogs with MCT show CBC results in the reference ranges. Any single hematological variable was not associated with specific clinical findings or disease stage, suggesting a minimal role of CBC in the overview of cMCT.

[1] Endicott MM, Charney SC, McKnight JA, et al. Clinicopathological findings and results of bone marrow aspiration in dogs with cutaneous mast cell tumours: 157 cases (1999-2002). Vet Comp Oncol. 2007;5(1):31-37. [2] Marconato L, Bettini G, Giacoboni C, et al. Clinicopathological features and outcome of dogs with mast cell tumors and bone marrow involvement. J Vet Intern Med. 2008:1001-1007.