Assessment of response to the treatment with masitinib (Masivet) of chemotherapy resistant, grade 2 and 3, metastasized canine cutaneous mast cell tumors. Report of four cases

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Introduction: c-Kit receptor with the ligand stem cell factor is involved in cell division, differentiation and survival of canine mast cell tumors (MCT). Thirty percent of canine MCT display a mutation in exon 8, 9, 11 or 17 of the c-Kit proto-oncogene. Masitinib is a novel tyrosine kinase inhibitor, targeting both c-Kit receptor (mutated and wild type) and PDGFRβ, FGFR3 and FAK pathway.

Material and methods: Four dogs with chemotherapy resistant, metastasized, grade 2 and 3 cutaneous MCT were treated with masitinib (10-12.5 mg/kg/day p.o.). Prior to the treatment with masitinib, these dogs received several cycles of prednisolone, vinblastin, lomustin and radiation therapy. All MCT became resistant to these treatment modalities. In fact, previous to treatment with masitinib the quality of life of all dogs warranted euthanasia. The mutation status of c-Kit has been analyzed in three of the four dogs.

Results: In one dog a deletion mutation in c-Kit (exon 11) was detected; in the other two no mutation was present. Masitinib induced CR in two dogs (one had the c-Kit mutation), with a notable response within seven days after start of therapy. PR and SD were obtained in the dogs with wild-type c-Kit. Treatment duration so far is 45 days. Overall tolerability of masitinib was good, and no side effects were noticed in this small study.

Conclusion: Masitinib seems an efficient drug to induce remission for chemotherapy resistant grade 2 and 3 MCT. A longer follow up is necessary to evaluate whether the remissions are durable