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Usefulness of a nutraceutical diet to improve qol and drugs use in a dog affected by a mast cell tumor: a case report.

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Case Report

On October 2014, a 10-years-old male neutered boxer presented to the Wiligelmo Veterinary Clinic of Modena (Italy) for the sudden onset of 3 cutaneous nodular lesions (Figure 1). The first, a large movable lesion, was clearly visible on the dorsal face of the second finger of the right forepaw (Figures 1A and 1B), which was linked to the paw by means of a tight peduncle. Intriguingly the skin of this lesion resulted intact, neither alopecic nor with signs of dermatitis. The second lesion, on right side of the tail, was subcutaneous, poorly movable and with a blackish, alopecic but not ulcerated skin (Figure 1C). The same features characterized the third lesion on the left dorsal side of the gluteus region (Figure 1D).

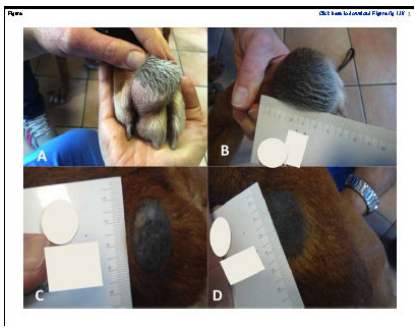

Figure 1. *Graphical representation of mast cell tumor in different cutaneous areas. (A-B) Interdigital lesion on the dorsal face of the second finger of the right forepaw (6 cm of length); (C) second lesion on right side of the tail (4.5 cm of length); (D) third lesion on the left dorsal side of the gluteus region (5 cm of length).*

All lymph nodes resulted in their normal dimensions. The skin presented some areas where the fur was easily detachable, dry, opaque and dispersed. Food history revealed the assumption of specific commercially available diets for gastrointestinal and dermatological issues.

Body of the Case

The dog resulted overweighed after a general objective exam (BCS evaluation 7/9). The cytological examinations of the 3 lesions revealed the presence of a well-differentiated mast cell tumor.

Trichological exam showed the presence of fungal spores compatible with Microsporum gypseum. Conversely, hemato-biochemical analyses, radiographic and ultrasonography investigations do not showed any significant alteration. Also liver and spleen samplings, by mean of fine needle aspiration biopsy, as well as exon 11 analysis do not revealed any mast cell infiltrates or genetic mutations, respectively.

Firstly the dog was assigned to receive Griseofulvin for one month, then a dose of 1 mg/kg Prednisolone and a tablet of Epato 1500 (twice a day). After one month the amount of Prednisolone was reduced to 0.75 mg/kg while the Griseofulvin was interrupted. The most difficult therapeutic concern was the necessity to use Prednisolone, as the only drug accepted by the owners against mast cell tumor, and the need to avoid it in order to prevent dermatophytosis spread. Three months later a nutraceutical, immune modulating diet (IMMUNOACTIVE, SANYpet S.p.A) was introduced **[1-3].** One week later the Prednisolone was reduced to 0.6 mg/kg and, after 15 days since the beginning of the nutraceutical diet supplementation, was interrupted. Three weeks later neoplastic lesions resulted slightly reduced (Figure 2).

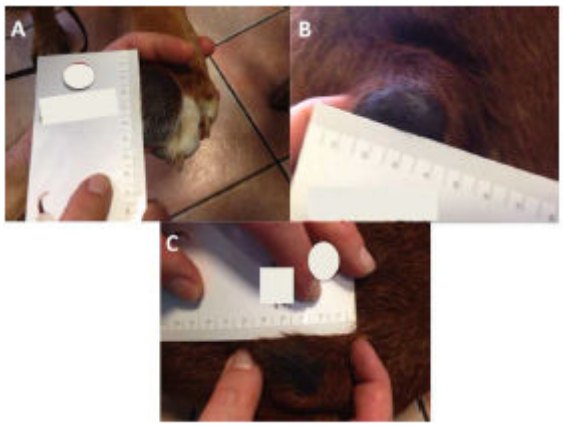

Figure 2. *Graphical representation of mast cell tumor in different cutaneous areas following 2 months of dietary intervention. (A-B) Interdigital lesion on the dorsal face of the second finger of the right forepaw (4 cm of length); (C) second lesion on right side of the tail (4 cm of length); (D) third lesion on the left dorsal side of the gluteus region (3 cm of length).*

Only itraconazole was continued every other week. After one month the right hind knee became aching and swollen with a II/III degree of lameness. Radiographically, the only visible alterations were ascribed to the presence of severe arthritis process and ligament lesions; therefore Previcox 227, once a day, was introduced.

Twenty days later the Previcox 227 dosage was reduced to maintenance dosage, along with a reduction of the aching, swollen and lameness, and completely interrupted after two months. After one month since Previcox 227 interruption a mycosis relapse occurred and itraconazole was re-introduced. All neoplastic lesions resulted still stable.

Seven months later an increase in all three cutaneous tumors was observable while no mycosis was present. Despite the daily assumption of the nutraceutical diet, the dog resumed the Prednisolone (1 mg/kg once a day) along with Kc Omega (2 capsules a day). Four months later the dog came to the clinic with a severe dyspnea, a moderate pleural effusion but a severe pneumothorax. Ultrasound investigation revealed a great hepatic mass. Due to the severe dyspnotic picture and the diffused metastases the animal was euthanized.

Starting from a Stage III mast cell tumor, poorly responsive to drugs belonging to the class of tyrosine kinase inhibitors, regardless surgical treatment and other chemotherapy protocols (refused by the owner), the choice of Prednisolone was the only therapeutic possibility towards such tumor. Unfortunately, this treatment was in contrast with that for dermatomycosis, which is facilitated by cortison-like drugs both locally and systemically **[4]**. Therefore it was necessary an alternative treatment that allowed reducing or even suspending the amount of Prednisolone. A further difficulty was represented also by the food hypersensitivity noticed during the anamnesis. The use of a hypoallergenic nutraceutical diet, enriched with botanicals (Cucumis melo, Aloe vera, Punica granatum, Piper nigrum, Camellia sinensis, Ascophyllum nodosum, Grifola frondosa, Glycine max, Echinacea purpurea, Poligonum spp., *Carica papaya* and *Curcuma longa*) with immune modulating and anti-inflammatory activity **[2]** and a high omega 3 and 6 ratio (3:1) resulted to be a valuable support to the pharmacological treatment, stabilizing the disease status for 11 months without the use of Prednisolone and allowing a better response to dermatomycosis.

Both in human and veterinary medicine, recent literature highlighted the influence of polyunsaturated fatty acids and some phytotherapic compounds-based remedies in the prevention and treatment of cancer **[5,6].** For instance, omega-3 polyunsaturated fatty acids, docosahexaenoic and eicosapentaenoic acid, showed to induce apoptosis and autophagy in MCF-7 breast cancer cells **[7].** As concerns *Curcuma longa [8],* Aloe vera [9], *Piper nigrum* **[10],** *Punica granatum* [11], *Camellia sinensis* **[12],** *Ascophyllum nodosum* [13], *Grifola frondosa* [14], *Glycine max* **[15**], *Echinacea purpurea* [16], *Poligonum cuspidatum* [17] and *Carica papaya* **[18]** they all showed cytotoxic and anti-proliferative activity towards several cancer models both in vivo and in vitro.

Finally, it is of great relevance to remind that poor body condition score and weight loss have been related to bad prognosis in dogs affected by neoplastic condition **[19],** and many owner s have great interest in change the diet of their pet, in order to help it in the every-day life, at home, using food as a simple, but very important tool to maintain a good QOL.

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