VII. Summary

Clinical findings, diagnostics, treatment and course of disease of canine immune-mediated thrombocytopenia and Evans´ syndrome, a retrospective study (January 1997-January 2003)

The purpose of this retrospective study (January 1997-January 2003) was to describe clinical findings, diagnostics, treatment and course of disease of dogs with primary immune-mediated thrombocytopenia (pIMT) and Evans´ syndrome, as only little information exists in the literature regarding these diseases.

Primary IMT was diagnosed in 30 dogs based on a positive platelet-bound antibody test result and the exclusion of other diseases.

The age of the dogs ranged between 3 months and 10 years (median 4 years). The female dogs (22/30) were markedly overrepresented with 73%. The study included 18 breeds and 6 mixed-breeds.

Twentytwo owners brought their dogs to be examined because of hemorrhages. For the other dogs the finding of thrombocytopenia was coincidental based on blood analysis carried out because of skin problems or lameness. Physical examination revealed hemorrhages in 70% of the dogs (21/30): petechia in the skin and mucosa (13), gingival bleeding (9), melena (6), ecchymoses (5), hyphema (4), epistaxis (3), hematochezia (2), hematoma (2), hematuria (2), hyposphagma (1). Seven dogs had an increased body temperature (39.1°C-40.3°C). Other findings were a slight general (2) or local (3) lymphadenopathy, splenomegaly (16), hepatomegaly (1) and hepatosplenomegaly (2).

On the first day of examination the platelet counts ranged from 0-111 G/l (median 8); 77% of the dogs (22/30) had platelet counts < 30 G/l. Initially the hematocrit (Hct) was 0.09-0.61 l/l (median 0.35). Seventeen dogs were anemic (Hct 0.09-0.36 l/l, median 0.31) and 12 had a leukocytosis (15.2-33.8 G/l, median 19). Five out of 9 dogs had a regenerative anemia and 4 a non-regenerative anemia. A coagulation panel was performed in 27 dogs. Prothrombin time (PT) was in the normal range for all dogs and activated partial thromboplastin time (aPTT) for 25 dogs. Abnormal findings of the clinical chemistry were hypoproteinemia and hypalbuminemia (5), azotemia (1), hyperglobulinemia (1) and increased serum liver enzymes (16).

Eleven dogs with hemorrhages or anemia were administered 1-3 blood transfusions for 1-4 days (median 2). All animals received fresh whole blood and 5 dogs received packed red blood cells in addition because of the anemia. Therapy for pIMT for 29 dogs consisted in treatment with prednisolone. The cytostatic agents azathioprine (3), vincristine (6) or cyclosporine were administered together with prednisolone either at the beginning of treatment or during treatment if the platelet count did not rise or after a relapse. One dog was not treated.

In 25 dogs with platelet counts < 50 G/l an increase of platelet counts > 50 G/l was detected after 1-15 days (median 5) in 96% of the dogs (24/25). 90% of the patients (27/30) attained a platelet count > 150 G/l after a period of 4-112 days (median 10). The recurrence rate among 19 dogs, which were treated over an extended period (112-1684 days, median 340), was 26% (5/19). One to four relapses (median 2) were observed. Relapses occurred after reduction of the prednisolone dose (5) or after withdrawal of the medication by the owner (3). In 3 dogs the reason for relapse was unknown. In the acute phase of the disease, i.e. the first 14 days, 97% of the dogs (29/30) survived. 93% of the dogs (27/29) survived the following 15-1684 days.

An **Evans´ syndrome** was diagnosed in 14 dogs. All dogs had a positive antiplatelet-bound antibody test. Furthermore the Coombs test was positive for 12 dogs and 2 had a persistent agglutination. The diagnosis was also based on the exclusion of other diseases or causes for a secondary IMT and a secondary immune-mediated hemolytic anemia (sIMHA).

This group included 5 different breeds and 5 mixed-breed dogs. The age ranged from 1-14 years (median 6) and the male dogs (9/14) were markedly overrepresented with 64%.

The most common case history included lethargy (9), inappetence (4) and hemorrhages (4). Conspicuous findings of the physical examination were: weakness (9), increased body temperature (6) and hemorrhages (6). The following hemorrhages were observed: mucosal and cutaneous petechia (5), ecchymoses (1), hematoma (1), melena (1), hyphema (1), and hyposphagma (1). Further findings were a slight lymphadenopathy (5) and an enlargement of the spleen and/or liver (7).

The platelet count ranged between 0.7 and 154 G/l (median 18) on initial examination, whereby the platelet count was ≤ 30 G/l in 64% of the dogs (9/14). 86% of the dogs (12/14) were anemic with a Hct in the range of 0.11-0.28 l/l (median 0.16). Six out of 13 dogs had a non-regenerative anemia and 7 a regenerative anemia. A leukocytosis with a range of 15.3-39 G/l (median 26.6) was observed in 9 dogs. PT and aPTT was measured in 13 dogs,

whereby the PT was in the normal range for all dogs and the aPTT for 12 dogs. Other conspicuous findings were increased serum liver enzymes (10) and bilirubin levels (8) as well as hypoproteinemia and hypalbuminemia (2).
Eleven dogs were administered 1-6 blood transfusions over a period of 1-6 days (median 3). Nine dogs received packed red blood cells and 7 dogs fresh whole blood. All dogs were treated immunosuppressively with prednisolone. Furthermore 5 dogs were administered azathioprine, 2 cyclosporine and 1 vincristine.
In 11 dogs with platelet counts < 50 G/l an increase of platelet counts > 50 G/l was detected after 2-13 days (median 6) in all cases. 92% of the dogs (12/13) attained a platelet count > 150 G/l after a period of 2-18 days (median 8). Ten out of 13 dogs with a Hct < 0.38 l/l showed an increase above 0.38 l/l within 23-270 days (median 38.5). The recurrence rate of 10 dogs, which were treated over an extended period (208-1880 days, median 375) was 70% (7/10). Some dogs had more than one recurrence. Relapses occurred after withdrawal of medication (2), reduction of medication dose (1) and in 3 dogs the reason for relapse was unknown. Relapses were more frequent with a platelet decrease (8) than with a Hct decrease (1). In 2 cases a decrease in platelets as well as in Hct was observed. In the first 14 days 93% of the dogs (13/14) survived. The rest survived the following 14-1880 days.

For 36 dogs the following causes might have triggered a secondary IMT (**sIMT)**: neoplasia (8), infectious disease (23), medication (2), blood transfusion (1), systemic lupus erythematosus (1) and disease of an unknown cause (1).
A positive platelet-bound antibody test and Coombs-test were detected in 9 dogs with an underlying disease. The following diseases might have caused **sIMT + sIMHA**: pyometra, ehrlichiosis, babesiosis, leishmaniasis, ehrlichiosis/borreliosis, leishmaniasis/babesiosis, lymphoma and lymphatic leukaemia.