CHANGES IN C-REACTIVE PROTEIN AND HAPTOGLOBIN IN DOGS WITH LYMPHATIC NEOPLASIA

Mischke R[1,2], Eckersall PD[2]
[1]*Small Animal Clinic, Hannover School of Veterinary Medicine, Hannover, Germany,* [2]*Division of Animal Production & Public Health, University of Glasgow, Glasgow, Scotland*

Introduction

In humans, acute phase proteins (APP) are regarded as a useful diagnostic tool in patients with lymphoma, leukaemias and multiple myeloma, and can be used as a prognostic factor and as an early indicator of sepsis. The aim of this pilot study was to examine the acute phase proteins (APP) C-reactive protein (CRP) and haptoglobin in dogs with different malignant, lymphatic blood disorders.

Materials and Methods

Dogs with malignant multicentric (high grade) lymphoma (n=16), acute lymphoblastic leukaemia (ALL) (n=11), chronic lymphocytic leukaemia (CLL) (n=7) und multiple myeloma (n=9) were included in the study. 25 healthy dogs served as a control.
Lithium-heparinate plasma was used as a sample material. Measurements of the CRP concentration was performed with an ELISA (Tridelta Development Ltd, Ireland), haptoglobin was measured with an assay based on its haemoglobin binding capacity (Eckersall *et al*, Comp Haem Int, 1999, **5**:117-121).

Results

Global group comparisons using Kruskal-Wallis test revealed significant group differences for both APPs ($p<0.0001$). Median CRP concentrations were increased in all groups with neoplastic lymphatic disorders (lymphoma: 37.2 mg/L, ALL: 47.8 mg/L, CLL: 35.5 mg/L, myeloma: 21.5 mg/L) compared to the control (1.67 mg/L; $p<0,001$). Compared to the 95 % quantile of the healthy control dogs (9.6 g/L), CRP concentration in 13 of 16 dogs with malignant lymphoma were increased, in 10 of 11 dogs with ALL, 6 of 7 dogs with CLL and 6 of 9 dogs with multiple myeloma.
Compared to the healthy control (median=0.59 g/L), haptoglobin level was especially increased in dogs with ALL (6.8 g/L, $p<0,001$) followed by dogs with malignant lymphoma (3.8 g/L, $p < 0.001$) and CLL (2.0 g/L, $p=0.0287$) (Fig. 2), whereas the results in dogs with multiple myeloma did not differ significantly from the healthy control (median=2.5 g/L, $p=0.0610$). The median values in the dogs with ALL were significantly higher than in dogs with other neoplastic lymphatic disorders ($p<0.05$), whereas no significant differences were observed between the other patient groups. Similar to CRP, a wide range of values was found in all patient groups. Compared to the 95 % quantile of the control (2.45 mg/L), 13 of 16 dogs with malignant lymphoma had increased values, 10 of 11 dogs with ALL, 3 of 7 dogs with CLL and 5 of 9 dogs with multiple myeloma.

Conclusion

Particularly severe and acute lymphatic neoplasia as high grade lymphoma and ALL are causing significant acute phase reactions in dogs. This fact has to be considered when using APP levels in dogs with lymphatic neoplasia as an indicator of infection or sepsis. Whether levels of acute phase proteins in dogs with neoplastic lymphatic disorders can be used as prognostic factors as is the case in humans has to be investigated in further studies.