A study of two acute phase proteins in cats with gingivitis

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Background

- Periodontal disease is a group of conditions characterised by plaque-induced inflammation of the periodontal tissues and is a very common condition in cats.[1]
- Positive acute phase proteins (APPs) are used for early detection and potentially monitoring of inflammatory diseases as they start to increase within few hours of the inflammatory stimulus and remains increased for as long as the inflammatory stimulus persists.[2]
- To our knowledge, there are only two published studies on APPs in cats with periodontal disease.[3,4] Both studies included cats with chronic gingivostomatitis and found elevations in serum α1-acid glycoprotein[3] and haptoglobin concentrations[4] as compared to healthy cats.

Objectives

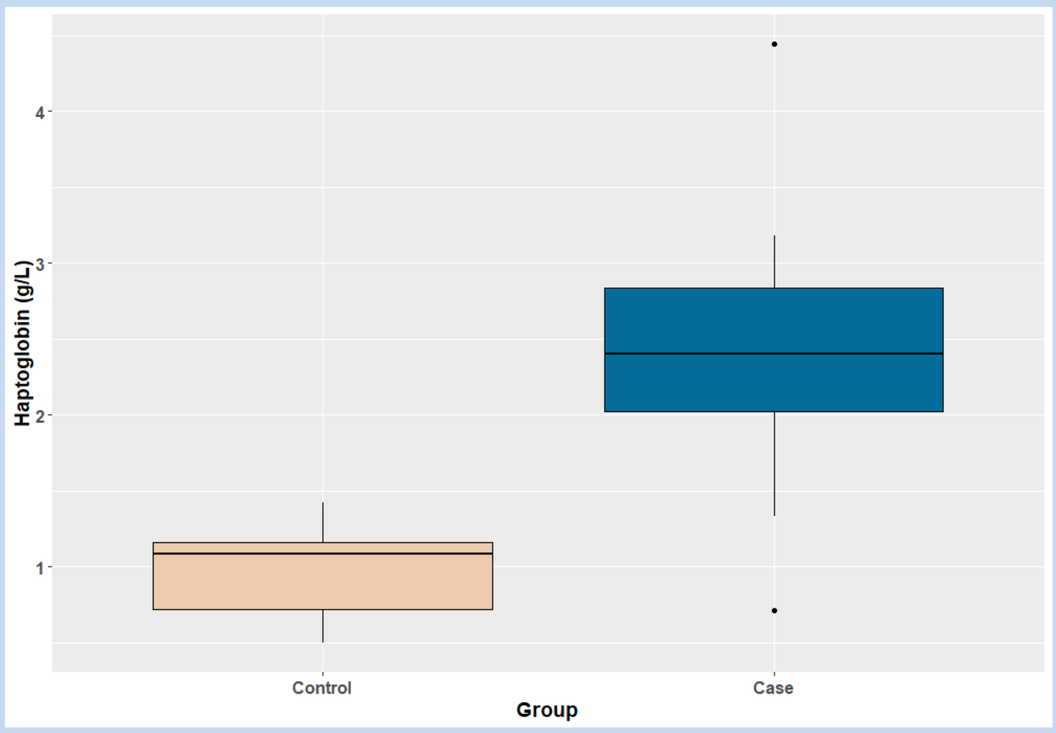
- The aims of this study were: i) to compare the acute phase proteins, serum amyloid A (SAA) and haptoglobin, concentrations between cats with gingivitis and healthy individuals and ii) to evaluate the correlation of these APPs with the severity of gingivitis.

Materials & Methods

- The cats were allocated into two age- and sex-matched groups. All cats should be >1 year old, fasted for 12h, seronegative for FIV antibodies and FeLV antigen (SNAP FIV/FeLV Combo Test, IDEXX Laboratories, USA), not medicated or had history of illness during the preceding month. The case group included cats with gingivitis and no evidence of underlying disease. The control group included clinically and clinicopathologically healthy cats without any evidence of gingivitis.
- The gingival bleeding was assessed based on the TMPS-G index using the Total Mouth Periodontal Score (TMPS) system.[5]
- The anesthetic protocol was identical for all cats.
- The blood samples were collected via jugular venepuncture into plain tubes, were allowed to clot for 20 minutes and were centrifuged at 1,800g x 5 minutes. Samples with haemolysis or lipaemia were excluded from further analysis.
- Serum amyloid A concentrations were determined by a human turbidimetric immunoassay (LZ-SAA; Eiken Chemical Co.) that was previously validated for use in cats.[6] Serum haptoglobin concentrations were determined by the haemoglobin-binding method with the use of a commercial kit (Tridelta Development Ltd.). The method was previously validated for use in cats.[7]
- R statistical language (R Foundation for Statistical Computing, Austria) was used for the statistical analysis. Statistical significance was set at 0.05 level.

Results

- In total, 22 cats (10 males and 12 females) were included (11 in the control groups and 11 in the case group). The median (range) age of cats was 5.0 (3.0-11.0) years.
- The median TMPS-G value for case group was 0.815 (0.13-2.5).
- The SAA was below the detection limit (0.4 mg/L) in all samples of the control group and in 10/11 samples of the case group. One sample from the case group had SAA of 0.5 mg/L.
- The median serum haptoglobin concentration was significantly higher (P = 0.001) in the case group [2.40 (0.72-4.44) g/L] compared to the control group [1.06 (0.50-1.42) g/L].
- A statistically significant, positive correlation was found between haptoglobin and TMPS-G (rho = 0.636, P = 0.040).



Comparison of serum haptoglobin values between the control and case group. The coloured boxes represent the 25th to 75th percentiles of data; they are bisected by a line, which depicts the median value.

Conclusions

- Feline gingivitis appears to be associated with increased serum haptoglobin as compared to healthy cats, suggesting the presence of acute phase reaction.
- Serum haptoglobin was significantly correlated with the severity of gingivitis and its role as a prognostic and monitoring tool should be further evaluated.

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