# Serial measurement of myeloperoxidase index and its association with outcome in hospitalized dogs with parvoviral enteritis: preliminary results

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## Background

- The myeloperoxidase index (MPXI) is a numerical estimate of myeloperoxidase content per leukocyte and is derived from the PEROX channel of the ADVIA and it is affected by degranulation, toxicity and maturity of neutrophils.[1]
- MPXI has been scarcely studied in veterinary medicine.[2–5]
- To our knowledge, MPXI has never been studied in dogs with canine parvoviral enteritis (CPVE).

## Objectives

- The aims of this study were to: i) serially evaluate MPXI in hospitalised dogs with CPVE and ii) compare it in dogs that died with survivors.

## Materials & Methods

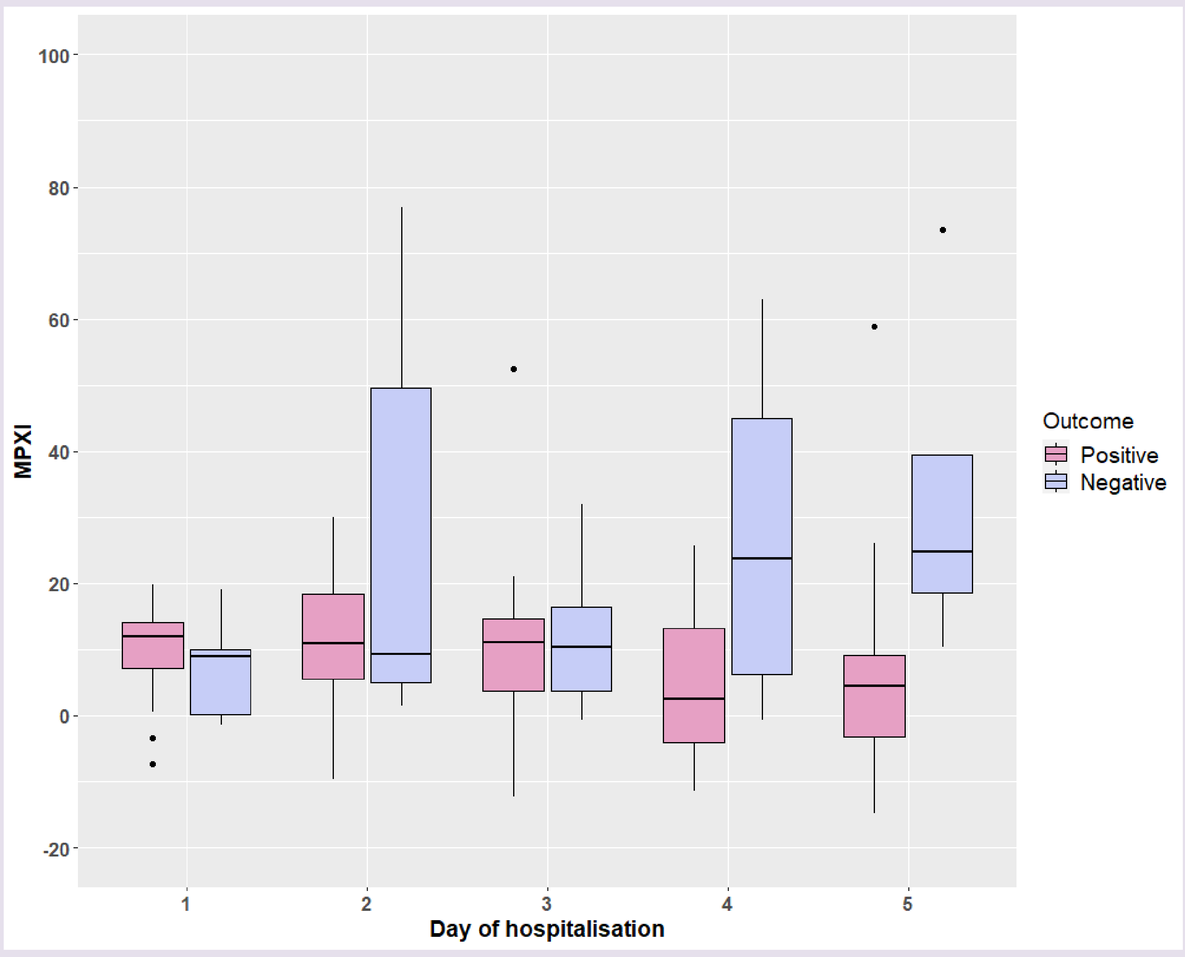
- Dogs were included in this study if the following inclusion criteria were met: i) age >1 month; ii) no vaccination against canine parvovirus (CPV) within 2 weeks prior to admission; iii) no previous medication; iv) clinical signs compatible with CPVE and absence of clinical or ultrasonographic findings indicative of an intestinal foreign body or morphological abnormalities of the gastrointestinal tract; v) negative faecal ELISA test for *Giardia* spp. antigen (Giardia Antigen Test Kit, IDEXX Laboratories); vi) negative faecal zinc sulfate flotation test for intestinal parasites and protozoa; and vii) positive faecal ELISA test for CPV antigen (Canine Parvovirus Antigen Test Kit, IDEXX Laboratories) and positive PCR for CPV.
- Blood was collected via jugular venipuncture into both $K_3$EDTA.
- A CBC was performed using the ADVIA 120 (Siemens Healthcare Diagnostics, USA) and results were recorded up to 7 days of hospitalisation.
- Survivors were defined as dogs that were discharged or were still hospitalised on day 7. Non-survivors included dogs that died during the 7-day hospitalisation period.
- Linear mixed effects (LME) models were used to evaluate the effect of day of hospitalization and outcome on MPXI and neutrophil count separately for each response variable. All statistical analyses were conducted using the statistical language R (R Foundation for Statistical Computing).

## Results

- 34 dogs (26 survivors, 8 non-survivors) with a median (range) age of 3 (1.5-12) months were included.
- The LME model revealed a significant interaction between day of hospitalisation and outcome for MPXI ($P$<0.001) and a significant effect of day of hospitalisation on neutrophils ($P$<0.001).
- Specifically, non-survivors had significantly higher ($P$<0.05) MPXI on days 2 [9.3 (1.4, 76.8), 4 [23.8 (-0.7, 62.9)] and 5 [24.7 (10.3, 73.5) of hospitalisation compared to admission day [8.9 (-1.4, 19.1).
- MPXI was significantly higher ($P$=0.004) in non-survivors [23.8 (-0.7, 62.9)] compared to survivors [2.5 (-11.5, 25.6)] on day 4.

## Results

- Neutrophils were significantly lower ($P$<0.05) on days 3 [1,530 (40, 9,450) /μL], 4 [1,210 (30, 13,490) /μL] and 5 [1,690 (10, 12,890) /μL] compared to admission day [6,555 (50, 21,040) /μL].
- MPXI was significantly correlated with neutrophils (rho=-0.266, $P$=0.001).




MPXI was compared in 34 dogs with canine parvoviral enteritis during a 5-day hospitalisation period, and it was also compared between survivors and non-survivors. The coloured boxes represent the main body of data; they are bisected by a line, which depicts the median value.

## Conclusions

- Serial measurements of MPXI appeared to have prognostic value in hospitalised dogs with CPVE.
- The exact mechanism of the increased MPXI is uncertain; nonetheless, reduced neutrophil function (associated with decreased neutrophil activation and degranulation) in non-survivors is possible, as it has been reported in septic and critically ill dogs.[6,7]

## References

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