Poster 16

TIME TREND IN HAPTOGLOBIN, C-REACTIVE PROTEIN AND PIG-MAP CONCENTRATION AFTER LONG DISTANCE TRANSPORT OF PIGS

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Introduction

The synthesis of acute phase proteins (APPs) is a physiological event that occurs following a threat to organism's homeostasis. Body's cytokine system activates these proteins and initiates the Acute Phase Response (APR), which leads to non-specific host defence and to repair mechanisms.
Positive APPs rise to concentrations several times the normal level in response to challenge; in swine the major positive APP include haptoglobin (Hp), C-reactive protein (CRP) and pig major acute phase protein (pig-MAP).
The aim of the present study was to investigate the effect of long distance transport on Hp, CRP and pig-MAP serum concentration and the changes of these APPs over a period of 28 days.

Materials and Methods

A total of 60 Landrace x Large White 4-month old gilts were transported from Denmark to Italy (a 48 h journey) and then followed up for 28 days. These animals were randomly allotted to three different groups (A, B, C) of 20 pigs. Each group was located in a 6 x 3.5 meter pen. Food and water were given *ad libitum* throughout the study. Blood samples were collected from all animals from the jugular vein immediately upon arrival and 28 days later (T_1, T_{28}). Group B was also bled on fourteenth day (T_{14}) while group C was also bled on third, fifth and fourteenth day (T_3, T_5, T_{14}).
In order to rule out concurrent inflammatory processes complete hematology profile was determined in fresh whole blood using a HemaVet 3500 analyser (CDC, Technologies, Oxford, CT) calibrated for swine and furthermore the serum from each blood sample was separated by centrifugation (3000 rpm, 10 min) and stored at –80°C. Serum haptoglobin and CRP concentrations were measured with commercial assay kits (Tridelta Development, Greystones, Ireland). Serum pig-MAP concentration was assayed with a sandwich ELISA test (PigCHAMP Pro Europa S.A., Segovia, Spain). The distributions of APPs were described using boxplots. After checking normality and homogeneity of variances for all data, non parametric methods (Friedman, Kruskal-Wallis and Wilcoxon tests) were applied.

Results

Hematology profiles supported the absence of inflammatory processes throughout this field study. APP concentrations on T1 in the three groups were similar ($P>0.05$) whereas group C showed higher levels on T28. The time trend about pig-MAP shown in the figure 1 below can paralleled to the other proteins.
Hp, CRP and pig-MAP showed similar behaviour: in groups A and B their concentrations on T_{28} compared to those on T_1 were decreased; in groups B and C increased median levels of APPs were detected on T_{14}, this was particularly evident in group C. With regard to pig-MAP and Hp the increase was statistically significant. Furthermore in group C data showed a trend toward lower serum concentrations of APPs on T_5 compared to those on T_1 and T_{14}.

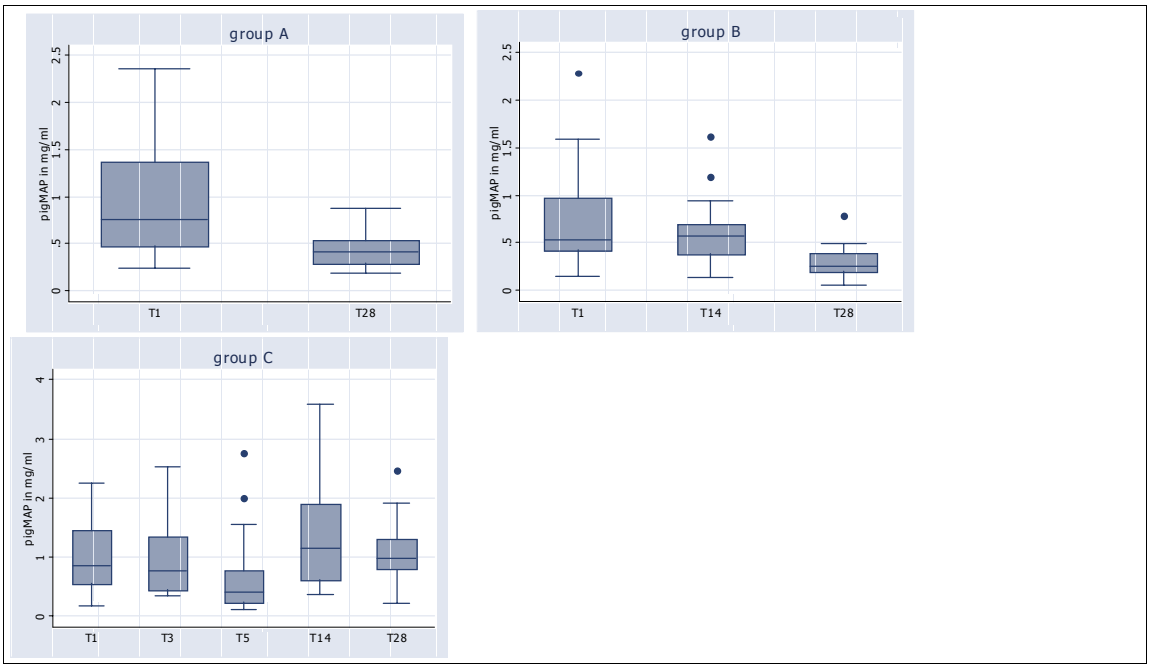

Fig.1 - Pig-MAP boxplots in groups A, B and C

Discussion

The quantification of Hp, CRP and pig-MAP concentrations in swine seems to be useful for evaluating stressing conditions unrelated to inflammatory processes even if statistical significance is not always reached.

Unexpectedly it has not been observed a constant trend toward lower concentrations of APPs from T_1 through $T_{28.}$ The increase observed on T_{14} could be likely due to the fact that gilts require a period of adaptation to a new environment.

This kind of stress in group B seems worked out within an additional 14-day period and probably the same happens in group A that was not bled on T_{14}. Serial blood samplings carried out on group C represent further stressors for gilts. That might explain why this group showed levels of the APPs particularly elevated on T_{14} and why on T_{28} higher concentrations persist.

Further studies are needed in order to get better understanding about the behaviour of Hp, CRP and pig-MAP after the move of swine to a new environment. Moreover it would be interesting to obtain data about APPs concentrations immediately before a long distance transport.

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