



**TITLE:** BLOOD LACTATE AS A PROGNOSTIC FACTOR ON DOG'S SURVIVAL AT 24 HOURS, 7 DAYS AND 28 DAYS, AFTER AN EMERGENCY APPROACH AND INTENSIVE CARE – THE RICO SCORE STUDY

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#### **ABSTRACT**

##### **Objectives of the study**

To determine the possible influence of lactate on dog's survival after emergency approach and intensive care.

##### *Material and Methods*

This study is part of a multicentric study called RICO Score Study – Rapid Intensive Care Score Study, developed at six veterinary (private and university) hospitals in Europe and South America. The main objective was to determine which factors would influence on dog's survival after an emergency approach. Eleven clinical and twenty eight laboratorial variables were included in the whole study, and this paper analyse blood lactate importance as a prognostic factor on survival.

Fifty six dogs (50,7% males and 49,3% females, 12,06 kg median weight – 0,6 to 46,3 kg, 67 months median age – 1,5 to 192 months) were included into the study group. All dogs entered a private hospital emergency service (Vetersalud Indra, Madrid, Spain) for several causes (43,7% gastroenteric, 26,8% mixt, 14,1% genital-urinary, 7% ortopedic, 4,2% cardiovascular, 1,4% respiratory, 1,4% neurologic and for 1,4% endocrine causes, where mixt disturbances where all animal with more than one system affected). The inclusion criteria was that all animals needed to be hospitalized after the emergency approach, so any urgency of less importance would not be selected. All samples were collected during the emergency approach (T0), before any kind of treatment and immediately processed for lactate measurement, using an automatic analyzer that uses fotometry reflexion (Accutrend® Lactate; Roche Diagnostica Brasil Ltda.). A second sample was collected 24 hours after the primary care (T24). A T Student test was used to compare T0 and T24 samples; and T0, T24 and delta-lactate (T24-T0) influence on 24h, 7 days and 28 days survival. Statistical significance was established at  $P < 0.05$ .

##### **Results and discussion**

The reference range in our study group for T0 lactate was  $3,60 \pm 1,66$ mmol/L (1,30 – 10,20mmol/L) and for T24 lactate it was  $2,39 \pm 0,90$ mmol/L (1,20 – 5,60mmol/L). There was a statistically significant difference ( $p < 0,0005$ ) between lactate levels measured at T0 and T24. All data are presented as mean  $\pm$  standard deviation: Lactate levels on T0 was statistically important as a prognostic factor for any breed, age, sex, weight, system affected or disease cause when survival was checked at 24 hours ( $3,33 \pm 0,21$ mmoL/L for survival patients and  $4,88 \pm 0,66$ mmoL/L for the ones who died,  $p < 0,006$ ), 7 days ( $3,10 \pm 0,21$ mmoL/L for survivals and  $4,44 \pm 0,40$ mmoL/L for non survivals,  $p < 0,002$ ) for 28 days ( $3,15 \pm 0,22$ mmoL/L for survivals and  $4,31 \pm 0,41$ mmoL/L for non survivals,  $p < 0,009$ ). Lactate levels on T24 was statistically important as a prognostic factor only for survival at 7 days ( $2,07 \pm 0,10$ mmoL/L for survivals and  $3,11 \pm 0,40$ mmoL/L for non survivals,  $p < 0,03$ ) and 28 days ( $2,06 \pm 0,10$ mmoL/L for survivals and  $3,05 \pm 0,36$ mmoL/L for non survivals,  $p < 0,02$ )

##### **Conclusions**

We concluded that blood lactate levels was statistically important as an independent prognostic factor for survival at 7 and 28 days after the initial emergency approach.