DIAGNOSTIC AND PROGNOSTIC ACCURACY OF CLINICAL, LABORATORY AND POST-MORTEM FINDINGS IN BACTERIAL SEPSIS IN DOGS

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CERTIFICATE

This is to certify that the thesis entitled **"DIAGNOSTIC AND PROGNOSTIC ACCURACY OF CLINICAL, LABORATORY AND POST-MORTEM FINDINGS IN BACTERIAL SEPSIS IN DOGS"** submitted in partial fulfillment of the requirements for the degree of **Master of Veterinary Science** in **VETERINARY PATHOLOGY** to the **Tamil Nadu Veterinary and Animal Sciences University,** Chennai – 51, is a record of bonafide research work carried out by **MORE HEMANT HANUMANT, MVM 15063 (VPP),** under my guidance and that no part of this thesis has been submitted for the award of any other degree, diploma fellowship or other similar titles or prizes.

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Place: Chennai

(Dr. S. RAMESH)
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Date: 11/12/17

Place: CHENNAI

EXTERNAL EXAMINER

ABSTRACT

DIAGNOSTIC AND PROGNOSTIC ACCURACY OF CLINICAL, LABORATORY AND POST-MORTEM FINDINGS IN BACTERIAL SEPSIS IN DOGS

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The present work was undertaken to study the hematobiochemical and pathological changes in dogs with bacterial sepsis and also to assess the diagnostic and prognostic value of serum procalcitonin level as a biomarker of canine bacterial sepsis.

A total number of 37 dogs which were brought to the Madras Veterinary College Teaching Hospital, Chennai-600 007 were chosen for the present study. Of which, 6 dogs which were brought for routine checkup and found apparently healthy were chosen as controls while the remaining 31 which showed signs of sepsis were chosen as non-controls. Among the non-controls, 16 were found to be with septic SIRS, 9 with non-septic SIRS and 6 were infected with *E. canis*. The septic SIRS, non-septic SIRS and *E. canis* infected groups fulfilled all the four criteria (viz hypothermia/ hyperthermia, tachycardia, tachypnea and leukocytosis/leucopenia) at 68.75, 55.55

and 83.33 percent followed by any three criteria at 31.25, 44.44 and 16.66 percent respectively.

Leucocytosis with neutrophilia and lymphopenia and decrease in hemoglobin concentration and RBC count were observed in all the three non-control groups. The septic group showed a significant increase in BUN, serum phosphorus and ALP and a significant decrease in serum albumin. The non-survivors recorded an elevated BUN and serum chloride levels. Critical parameters revealed a significant decrease in blood pressure and SpO_2 concentration and an increase in blood lactate in all the non-control groups as well as in the survivors and non-survivors. The non-survivors recorded a significantly higher procalcitonin value. Microbiological studies differentiated septic SIRS from non-septic SIRS. PCR characterized the *Staphylococcus spp.* as methicillin susceptible and methicillin resistant.

Mortality was reported in 4 out of 16 septic SIRS cases. Congestion, edema and consolidation of lungs were the most common post mortem findings. The liver showed reddish discoloration, congestion, enlargement and mottling while the kidneys revealed granular and pitted cortex with adherent capsule. Intestine showed congestion and multifocal ecchymosis in the mucosa. Histopathological examination of the lungs revealed edema, congestion and hemorrhages. Liver and kidney showed degenerative changes while the intestine revealed mild hemorrhage in the mucosa and submucosa

Elevated procalcitonin level which was recorded in septic animals died during later stages, correlated well with clinical presentation, hematobiochemical analysis, critical parameters profile, bacterial culture, necropsy and histopathological findings. The present findings have proved procalcitonin as a reliable prognostic marker of bacterial sepsis that can be employed in routine clinical settings in future.

Keywords: Dogs- SIRS- bacterial sepsis- marker- lactate- SpO_2- procalcitonin- necropsy.