



E-ISSN: 2320-7078

P-ISSN: 2349-6800

www.entomoljournal.com

JEZS 2020; 8(5): 1412-1413

© 2020 JEZS

Received: 06-06-2020

Accepted: 04-08-2020

Amaravathi P

Department of Veterinary
Clinical Complex, College of
Veterinary Science, SVVU,
Tirupati, Andhra Pradesh, India

Prebavathy T

Department of Veterinary
Clinical Complex, College of
Veterinary Science, SVVU,
Tirupati, Andhra Pradesh, India

Rajesh K

Department of Veterinary
Clinical Complex, College of
Veterinary Science, SVVU,
Tirupati, Andhra Pradesh, India

Vaikunta Rao V

Department of Veterinary
Clinical Complex, College of
Veterinary Science, SVVU,
Tirupati, Andhra Pradesh, India

Bharathi S

Department of Veterinary
Clinical Complex, College of
Veterinary Science, SVVU,
Tirupati, Andhra Pradesh, India

Raghunath M

Department of Veterinary
Clinical Complex, College of
Veterinary Science, SVVU,
Tirupati, Andhra Pradesh, India

Corresponding Author:

Prebavathy T

Department of Veterinary
Clinical Complex, College of
Veterinary Science, SVVU,
Tirupati, Andhra Pradesh, India

Clinicopathological findings in dogs with cardiac diseases

Amaravathi P, Prebavathy T, Rajesh K, Vaikunta Rao V, Bharathi S and Raghunath M

DOI: <https://doi.org/10.22271/j.ento.2020.v8.i5t.7700>

Abstract

In the present study 10,921 canine clinical cases suspected for various cardiac diseases were screened. Ten apparently healthy dogs were selected as control group and twenty seven clinical cases of dogs with various cardiac diseases were examined. In the present study there was significant ($P<0.05$) decrease in haemoglobin, PCV, lymphocytes and platelet count and significant ($P<0.05$) increase in total leukocyte count and neutrophils in dogs with cardiac diseases. Significant ($P<0.05$) increase in ALT, AST and BUN levels and significant ($P<0.05$) decrease in total protein values were noticed in dogs with cardiac diseases. Non-significant decrease in albumin levels and no significant change in creatinine levels were observed between healthy dogs and dogs with cardiac diseases. It was concluded in initial stages of cardiac diseases till cardiac renal syndrome gets deeply involved, there won't be any clinicopathological changes like haemogram, leukogram and routine biochemical changes significant for cardiac involvement.

Keywords: ALT, AST, cardiac diseases, haemoglobin and platelet count

Introduction

Cardiac diseases in canines are extensively studied but meagre information has been reported all over the world and also in India^[1]. Recognition of canine cardiac diseases has been delayed and ignored on account of lack of awareness and knowledge by the owner and inadequate diagnostic facility in our country^[2]. Despite these numbers, many people are unaware that their dog may be at risk of cardiac disease. It is important that every dog considered vulnerable to cardiac diseases should be examined for cardiac function during routine examination^[3]. A delay in diagnosis and treatment could result in a grave prognosis or life threatening condition. Most of the times cardiac diseases are detected too late until pronounced signs appear^[4]. The present study was conducted to record the haematobiochemical changes in dogs with cardiac diseases.

Materials and Methods

In the present study 10,921 canine clinical cases suspected for various cardiac diseases were screened with specially designed cardiac data sheet at Veterinary Clinical Complex, College of Veterinary Science, Tirupati in the year 2019. Ten apparently healthy dogs were selected as control group and clinical cases of dogs with various cardiac diseases were examined. These clinical cases were subjected to thorough clinical examination, ECG, thoracic radiography. From twenty seven clinical cases, confirmed for cardiac diseases blood was collected for clinicopathological examination. Haemogram and biochemical analysis were performed as per the standard methods at Veterinary Diagnostic Laboratory, Veterinary Clinical Complex. The results were analysed statistically by performing T- test using statistical analysis tool pack, SPSS software version 20.

Results and Discussion

In ten apparently healthy dogs and in twenty seven dogs with cardiac diseases the mean values of haemoglobin, packed cell volume (PCV), total leukocyte count (TLC), neutrophils, lymphocytes and platelet count were shown in Table 1.

Table 1: Mean values of haematology parameters

Parameter	Control Group	Dogs with cardiac diseases
Haemoglobin (gm%)	13.67 ± 0.49	8.43 ± 0.49*
PCV (%)	39.89 ± 1.55	25.22 ± 4.24*
TLC (thousands/ µl)	11.8 ± 1.01	25.08 ± 4.92*
Neutrophils (%)	70 ± 2.92	84.9 ± 1.8*
Lymphocytes (%)	29.9 ± 1.59	13.72 ± 1.8*
Platelet count (lakhs/µl)	3.58 ± 0.63	1.88 ± 0.19*

* Significant at $P < 0.01$, T- test

In the present study significant ($P < 0.05$) decrease in haemoglobin, PCV and lymphocytes and significant ($P < 0.05$) increase in total leukocyte count, neutrophils and in dogs with cardiac diseases. Similar findings were reported by earlier authors [4-8]. Significant ($P < 0.05$) decrease in platelet count was observed in dogs with cardiac diseases and it was in accordance with Deepti and Yathiraj [7]. Farabough *et al.* [5] indicated that clinical implications of these findings were not known but in human beings, low haemoglobin levels are predictors of mortality in people. The changes in hematology parameters might be due to neurohormonal alterations in congestive heart failure [9].

Mean values of ALT, AST, BUN, creatinine, total protein and albumin in healthy dogs and in dogs with cardiac diseases were shown in Table 2.

Table 2: Mean values of biochemical parameters

Parameter	Control	Dogs with cardiac diseases
ALT (IU/L)	19.93 ± 4.87	123.47 ± 28.35*
AST (IU/L)	21.54 ± 4.59	182.28 ± 57.29*
BUN (mg/dl)	12.52 ± 1.65	29.38 ± 5.73*
Creatinine (mg/dl)	1.54 ± 0.13	1.73 ± 0.05
Total Protein (g/dl)	8.72 ± 0.14	5.21 ± 0.45*
Albumin (g/dl)	3.44 ± 0.23	1.86 ± 0.24

* Significant at $P < 0.01$, T- test

There was significant ($P < 0.05$) increase in ALT, AST and BUN levels and significant ($P < 0.05$) decrease in total protein values were noticed in dogs with cardiac diseases. Increases in ALT levels were observed by Ristic [9] and Olsen *et al.* [10] who indicated that increase in ALT might be due to hepatic congestion. Increased BUN levels were noticed by earlier authors [4, 11, 12]. Dogs with dilated cardiac myopathy were highly prone for kidney failure through reduced cardiac output due to systolic failure. Renal arterial and renal blood flow was reduced due to secondary effects of low cardiac output [13]. Non-significant decrease in albumin levels and no significant change in creatinine levels were observed between healthy dogs and dogs with cardiac diseases.

Conclusion

In initial stages of cardiac diseases till cardiac renal syndrome gets deeply involved, there won't be any clinicopathological changes like haemogram, leukogram and routine biochemical changes significant for cardiac involvement.

Acknowledgements

The authors are thankful to Sri Venkateswara Veterinary University, Tirupati for providing facility to carry out this work.

References

1. Hoque M, Saxena AC, Reetu, Gugjoo MB, Bodh D.

Cardiac diseases in dogs. Indian Journal of Animal Health. 2019; 58(1):1-20.

- Devi S, Jani RG, Anne FK, Singh RD. Study on clinical symptoms in canine cardiac diseases. Veterinary World. 2009; 2(8):307-309.
- Vengsarkar SA. The diagnosis of cardiac diseases in canines. M.V. Sc. thesis. Bombay Veterinary College, Mumbai, India, 1988.
- Martin MWS, Johnson MJS, Celona B. Canine dilated cardiomyopathy: A retrospective study of signalment, presentation and clinical findings in 369 cases. Journal of Small Animal Practice. 2009; 50:23-29
- Farabough AE, Freeman, LM, Rush JE, George KL. Lymphocyte subpopulations and hematologic variables in dogs with congestive heart failure. Journal of Veterinary Internal Medicine. 2004; 18:505-509.
- Sesh PSL, Venkatesh P, Jeyaraja K, Chandrasekar M, Pandiyan V. Haematological Profile of Dilated Cardiomyopathy Affected Dogs. Indian Veterinary Journal. 2014; 91(1):77-78.
- Deepti BR, Yathiraj S. Hematological and biochemical variables in Congestive heart failure in dogs. International Journal of Science, Environment and Technology. 2015; 4(3):836-840.
- Vishnurahav RB, Ajith Kumar S, Usha Narayana Pillai, Madhvan Unny N, John Martin KD, Aravindakshan TV *et al.* Haemato-biochemical changes associated with dilated cardiomyopathy in dogs – a retrospective study. International Journal of Science, Environment and Technology. 2017; 6(6):3377-3381.
- Ristic J. Clinical assessment of the dog with suspected cardiac disease. In Practice. 2004; 26:192-199.
- Olsen LH, Haggstrom J, Petersen HD. Acquired valvular heart disease. In Ettinger, S.E. and Feldman, F.C., (eds): Textbook of Veterinary Internal Medicine. Edn 7, W.B. Saunders Co., Philadelphia, 2010, 1299-1319.
- Tidholm A, Jonsson L. A retrospective study of canine dilated cardiomyopathy 189 cases. Journal of the American Animal Hospital Association. 1997; 33:554-560.
- McEwan JD. Canine dilated cardiomyopathy: Breed manifestations and diagnosis. Practice. 2000; 22:520-530.
- Thomason JD, Rapoport G, Fallaw T, Calvert CA. The influence of enalapril and spironolactone on electrolyte concentrations in Doberman pinschers with dilated cardiomyopathy. Veterinary Journal. 2014; 202:573-577.