



SHORT COMMUNICATION

## Study on Prevalence of Cardiovascular Diseases in Canines of Jammu

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### ABSTRACT

The present study was conducted to screen various cardiovascular diseases in the Sher-e-Kashmir University of Agricultural Sciences and Technology Jammu, between July 2012 and June 2013. The prevalence of Cardiovascular diseases (CVDs) was found to be 1.61 percent with maximum occurrence in month March (16 percent). Males (56 percent) were more affected than female with highest prevalence in Labrador breed (44 percent). Dogs in the age group of old age (>5 year) were found most susceptible (64 percent) to CVDs. Category wise division of Cardiovascular disorders revealed prevalence of Left atrial enlargement (40 percent), DCM (24 percent), CHF (16 percent), Bi atrial enlargement (12 percent) and 2° AV block (8 percent). Grading of CVD based on clinical signs as per New York Heart Association Insufficiency Score revealed prevalence of Class I (8 percent), Class II (16 percent), Class III (20 percent) and Class IV (56 percent).

**Keywords:** Cardiovascular diseases, Prevalence, Grading, Dogs

Dogs are members of the order Carnivora, a group of mammals with origin in the tertiary era, about fifty-five million years ago (Pachauri, 1999). Dog population in India has been estimated approximately 29 million (18<sup>th</sup> Indian Livestock Census, 2007). Dog is man's best friend and a faithful companion because of obedience and loyalty, the friendly association has been in existence from time immemorable. Since the beginning of civilization dog has been selected and bred for different purposes like protection against strangers, hunting and companionship. Interest in dog keeping has increased immensely in recent years particularly in urban areas of country (Lorenz and Zolk, 1984). Many diseases have been observed in dogs during recent years, amongst these heart diseases are common. Heart diseases affect 25 percent of dogs over 7 years of age (Evans *et al.*, 2007). About 10 per cent of all dogs suffer from some form of heart disease. Heart disease is defined as any abnormal finding related to cardiovascular system. Cardiac diseases in canine include

cardiomyopathy, pericardial effusion, hypertension, arrhythmia, endocardiosis and valvular disease (Rush and Bonagura, 2006). Cardiomyopathy (disease of the heart muscle) results in a thinning and deterioration of the heart muscle resulting in the inability of the heart to pump with sufficient force to maintain the body's normal state. Older dogs of all breeds may develop congestive heart failure as the heart ages. Most heart problems will not show visible clinical signs in dog until late in the disease. By the time clinical signs are observed, the heart is usually already severely damaged (Dukes *et al.*, 2000). Specific breeds of dog such as Boxers, Dobermans, Great danes and Yorkshire terriers may be born with heart problems or develop problems at early stage (Wilkies, 1980).

Keeping in view the paucity of information and importance of cardiovascular diseases in dogs in the study area, present work was undertaken to determine the prevalence of cardiovascular diseases and associated risk factors in dogs.

The present study was conducted to screen various cardiovascular diseases in the *cses* brought in Sher-e-Kashmir University of Agricultural Sciences and Technology Jammu, between July 2012 and June 2013. A comprehensive history comprised of description of patient with respect to age, sex, breed, vaccination, deworming status, owner's chief complaint about dog and main symptoms observed, time of onset of symptoms, previous treatment if any and response thereof were recorded. Details regarding environment contact with other pets or stray dogs and migration of dog from distant place were also recorded.

Patient examination included present status of appetite, water intake, urination, type of feed given, defaecation, vomiting, behaviour, conformation, posture or gait, fainting/ syncopal episodes, cyanosis, cough reflex, time of cough, character of cough, oedema, ascitis and exercise intolerance. The dogs were examined for symptoms of exercise intolerance, dyspnoea, tachypnea, ascitis, jugular distension, epistaxis, cyanosis and cough. Animals showing these signs were suspected for cardiovascular diseases and investigated thoroughly. Observation for the presence or absence of ecto parasites was also made. Clinical examination involved observation of the rectal temperature, heart rate, respiration rate and pulse rate. Conjunctival or gingival mucous membrane was examined and dehydration status was ascertained by state of muzzle, nostrils and skin tenting time. Body weight of the animal was also recorded. On the basis of history, clinical symptoms, electrocardiographic changes, haemato-biochemical observations, radiographic findings and duration and progression of the disease, diagnosis of disease was done. Heart diseases were graded based on New York Heart Association Insufficiency Score (Darren and Bowles, 2012).

The overall prevalence of Cardiovascular disorders was found to be 1.61 per cent with maximum (4 cases; 16) during March and April, 2013 and minimum (1 case; 4 percent) in August, November, December 2012, January, June, 2013.

The highest prevalence was found in Labrador Retriever (44 percent) and lowest in Cocker Spaniel (4 percent), Saint Bernese (4 percent), Pug (4 percent), Bakerwali (4 percent), Bull Mastiff (4 percent), Lhasa Apso (4 percent) and Doberman (4 percent) (Table 1), which is in

comparable with study conducted by Baumgartner and Glaus (2004) in 431 dogs in United States. In the present study sex wise prevalence revealed higher occurrence in male (14 cases; 56 percent) than female (11 cases; 44 percent). It was found in agreement with Christophe and Riedesel (1984) and Castro *et al.* (2009).

**Table 1: Classification of CVDs based on New York Heart Association Heart Insufficiency Score**

| ScoSCORE             | Clinical SCLINICAL SIGNS  |
|----------------------|---|
| Class I (mild)       | No limitation in physical activity. Ordinary physical activity does not cause undue fatigue, palpitation, or dyspnea.   |
| Class II (mild)      | Slight limitation in physical activity. Comfortable at rest, but ordinary physical activity results in fatigue, palpitation, or dyspnea.  |
| Class III (moderate) | Marked limitation in physical activity. Comfortable at rest, but less than ordinary physical activity causes fatigue, palpitation, or dyspnea. If physical activity is undertaken, discomfort is increased. No limitation in physical activity. Ordinary physical activity does not cause undue fatigue, palpitation, or dyspnea. |
| Class IV (severe)    | Cannot perform any physical activity without discomfort. Clinical signs seen at rest.   |

**Table 2: Breed wise prevalence of CVDs**

| S.No. | Breed           | No. of positive cases |        | Total |
|-------|-----------------|-----------------------|--------|-------|
|       |                 | Male                  | Female |       |
| 1     | Labrador        | 5                     | 6      | 11    |
| 2     | Spitz           | 1                     | 2      | 3     |
| 3     | Cocker Spaniel  | 1                     | 0      | 1     |
| 4     | German Shepherd | 3                     | 1      | 4     |
| 5     | Saint Bernese   | 1                     | 0      | 1     |
| 6     | Pug             | 1                     | 0      | 1     |
| 7     | Bakerwali       | 1                     | 0      | 1     |
| 8     | Bull Mastiff    | 1                     | 0      | 1     |
| 9     | Lhasa Apso      | 0                     | 1      | 1     |
| 10    | Doberman        | 0                     | 1      | 1     |

This could be attributed to the fact that bitches become calmer with sexual maturity in contrast to male dogs (Kovacevic *et al.*, 1999). Possibly difference in hormonal level of male and female is responsible for higher frequency of cardiomyopathy in males than females.

The incidence in males appeared to be related to their highest proportion in the hospital. Majority of the male dog presented to the veterinary clinic were from defense forces, which were transported to various defense units of Jammu region from various part of the country, transportation stress may probably have disposed the animal to disease. Moreover these dogs were mostly used for heavy routine duty exercise like sniffing, tracking. Continuous sniffing leads to accumulation of dust, dirt and other metallic impurities in lungs leading to severe pulmonary congestion which in turn affected circulation and thus causing the disease. Similar observations have been recorded by Mahajan (2007) where he reported CVDs in 66 per cent male and 44 per cent female.

In the present study age wise prevalence of Cardiovascular disorders revealed higher (16 cases; 64 percent) in old age compared to the (9 cases; 36 percent) in adult. No prevalence was observed in juvenile dogs. Average age of dogs suffering from cardiovascular disorders was  $7.02 \pm 0.63$  years. This was found in agreement with Wess *et al.* (2010) reported cardiovascular diseases mainly in dogs aged more than six years (88.7 percent) followed by 22.4 per cent in dogs aged 2 – 6 years and least common in young dogs (3.3 percent) up to two years of age.

In comparison to young animals, the elderly have multiple pathophysiological conditions (Paddleford *et al.*, 1999). Aging is associated with the structural and functional changes in the cardiac pacemaker and in its conduction system. An increase of collagen between the tissue cells of the atrioventricular node and in bundle of His may occur, thus reducing the velocity of impulse conduction in the segments (Schmidlin *et al.*, 1992). Possibly this might be the cause of higher frequency of cardiovascular diseases in dogs aged more than 5 years or elder dogs.

The present study also showed highest prevalence of left atrial enlargement (40 percent) followed by cardiomyopathy (24percent) and CHF (16percent). The prevalence of 2° AV block and biatrial enlargement was recorded (8 percent) and (12percent), respectively. This is in agreement with Sarita and Jani (2008) who reported

similar prevalence of 2° AV block and biatrial enlargement in her study on CVDs in dogs.

Prevalence of CVD was (8percent) in Class I, (16 percent) in Class II, (20 percent) in Class III and (56 percent) in Class IV. Highest number of cases were graded to have advanced cardiac problem. Similar to present study all the above mentioned clinical signs were also reported by Van *et al.* (1981); Lunney and Ettinger (1995); Sisson *et al.* (1999); Bright and Cali (2000); Guglielmini *et al.* (2001); Noszczyk (2010) and Varshney *et al.* (2011b) in different types of cardiovascular diseases.

The present study was based on electrographic, radiographic and haematobiochemical alterations it provided an insight to the current prevalence and associated risk factors. It is suggested that cardiovascular diseases in canines are highly prevalent in the study area. Therefore during the control and treatment of cardiovascular diseases age, season, breed and body condition should be considered as risk factors for the occurrence of the disease. Further studies on the economic importance and improved diagnostic approaches should be conducted for the holistic implementation in addition to effective strategic treatment.

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