

# Prevalence of Cardiac Diseases in Cats

Mypati Vishnu Vardhan<sup>1\*</sup>, Kype Basava Reddy<sup>2</sup>, Bollam Shobhamani<sup>3</sup>, Siddavatam Vijaya Lakshmi<sup>4</sup>

## ABSTRACT

This study was aimed to determine the prevalence of cardiac diseases in cats presented to the Super-Speciality Veterinary Hospital, SVVU, Visakhapatnam, based on breed, age, gender and body weight. Of the 2,872 cats presented from April 2024 to March 2025, 164 cats with symptoms of cardiac disease were subjected to physical examination, electrocardiography, echocardiography and haemato-biochemical analysis. Hypertrophic cardiomyopathy (HCM) was diagnosed based on an end-diastolic interventricular septum or left ventricular posterior wall thickness  $\geq 6$  mm on M-mode, while restrictive cardiomyopathy (RCM) was confirmed by normal wall thickness, an LA/Ao ratio  $>1.5$  on M-mode, and an E/A ratio  $>2$  on pulsed-wave Doppler echocardiography. Among them, 10 were diagnosed with HCM and 6 with RCM. The overall prevalence of cardiac diseases in the total presented cases was 0.56 %, while among the 164 screened cases, 9.76 % had cardiomyopathy. The HCM accounted for 6.10 % and RCM for 3.66 %. HCM was more prevalent in Persian cats (80%), whereas RCM was more common in non-descript cats (66.6%). Cardiomyopathy was most commonly observed in cats aged 5-10 years (75%), with a higher prevalence in males (68.7%) and those weighing 3 to 5 kg (81.25%). The study concluded that HCM is the most prevalent cardiomyopathy in Persian cats.

**Key words:** Cat, Hypertrophic cardiomyopathy, Pulsed-wave Doppler echocardiography, Restrictive cardiomyopathy, Risk factors.

*Ind J Vet Sci and Biotech* (2025): 10.48165/ijvsbt.21.6.29

## INTRODUCTION

Cardiac diseases in cats are often underdiagnosed due to their subtle clinical presentation and unique anatomical and physiological traits. Among these, cardiomyopathies are the most common acquired heart conditions and rank among the top ten causes of death in cats. These myocardial disorders vary in presentation and prognosis (Luis Fuentes *et al.*, 2020). Based on morphological and haemodynamic criteria, cardiomyopathies are primarily classified into three types: hypertrophic cardiomyopathy (HCM), restrictive cardiomyopathy (RCM), and dilated cardiomyopathy (DCM) (De Madron *et al.*, 2015).

HCM is the most common cardiomyopathy in cats and characterised by hypertrophied, non-dilated left ventricle (LV) in the absence of other systemic or cardiac diseases capable of producing a similar degree of hypertrophy (Payne *et al.*, 2013). Certain breeds, such as Persian, British Shorthair, Ragdoll and Maine Coon are predisposed to this condition. The aetiology of HCM is variable. In many cases, it is idiopathic while in specific breeds like Ragdoll and Maine Coon, it is associated with a genetic mutation in the *MyBPC3* (myosin-binding protein C3) gene. Secondary causes of compensatory concentric hypertrophy include aortic stenosis, systemic hypertension and hyperthyroidism (Cote *et al.*, 2011). HCM leads to diastolic dysfunction, myocardial ischemia and arrhythmias, with complications such as congestive heart failure, arterial thromboembolism and sudden death.

Cats with cardiomyopathy exhibit a wide spectrum of clinical signs, ranging from asymptomatic cases to severe manifestations. As the disease progresses, symptoms such as respiratory distress, lethargy, anorexia, tachypnoea, coughing

<sup>1</sup>Department of Veterinary Medicine, College of Veterinary Science, Tirupati-517502, Sri Venkateswara Veterinary University, Andhra Pradesh, India

<sup>2</sup>Department of Veterinary Medicine, College of Veterinary Science, Garividi-535101, Sri Venkateswara Veterinary University, Andhra Pradesh, India

<sup>3</sup>Director of Extension, Dr. Y.S.R. Bhavan, Tirupati-517502, Sri Venkateswara Veterinary University, Andhra Pradesh, India

<sup>4</sup>Department of Veterinary Microbiology, College of Veterinary Science, Proddatur-516434, SVVU, Andhra Pradesh, India.

**Corresponding Author:** Dr. M. Vishnu Vardhan, MVSc Scholar, Department of Veterinary Medicine, College of Veterinary Science, Tirupati-517502, Sri Venkateswara Veterinary University, Andhra Pradesh, India. e-mail: mvishnuvardhan22@gmail.com

**How to cite this article:** Vishnu Vardhan, M., Basava Reddy, K., Shobhamani, B., & Vijayalakshmi, S. (2025). Prevalence of Cardiac Diseases in Cats. *Ind J Vet Sci and Biotech*, 21(6), 158-160.

**Source of support:** Nil

**Conflict of interest:** None

**Submitted** 29/06/2025 **Accepted** 04/08/2025 **Published** 10/11/2025

and syncope may occur, with severe cases at risk of hindlimb paresis and sudden death. The silent progression of these diseases can lead to fatal outcomes. The aim of this study was to determine the prevalence of cardiac diseases in cats based on breed, age, gender and body weight.

## MATERIALS AND METHODS

### Source of Animals

The present study was conducted at the Super-Speciality Veterinary Hospital (SSVH), SVVU, Visakhapatnam, AP (India)

during the period from April 2024 to January 2025. Out of total 2,872 cat cases, 164 adult cats presented with clinical signs suggestive of cardiac diseases namely anorexia, lethargy, dyspnoea, cough, exercise intolerance, syncope, open-mouth breathing, hindlimb paresis, ascites, murmurs and combination thereof were included in the study. Cats below one year of age, dehydrated, or with a history of glucocorticoid therapy were excluded.

### Echocardiography

Selected cats underwent a physical examination and were then kept in a calm environment for 10 min to minimize stress. Echocardiographic examinations were performed using the Esaote Biosound Mylab 25 Gold Premier portable ultrasound system equipped with a 1-4 MHz phased array probe without sedation. All echocardiographic procedures and measurements were conducted as per standard techniques described by Boon (2011). A sweep speed of 50 or 100 mm/sec was maintained to better separate the events of diastole and systole. All measurements were calculated on freeze-frame images using the leading edge to leading edge method. Two-dimensional guided M-mode right parasternal short-axis and long-axis images of the left ventricle were used to measure the interventricular septum and posterior wall thickness in both systole and diastole. The left atrial-to-aortic ratio (LA/Ao) was determined by measuring the left atrial diameter (LAD) and aortic diameter (Ao) in early diastole, with the M-mode cursor positioned perpendicular to the aortic walls at the level of the aortic valve in the right parasternal short-axis view. The left apical four-chamber view in pulsed-wave doppler was used to measure mitral valve peak E-wave velocity(m/s), peak A-wave velocity(m/s) and the E/A ratio. HCM was diagnosed based on an end-diastolic interventricular septum or left ventricular posterior wall thickness  $\geq 6$  mm on M-mode (Luis Fuentes *et al.*, 2020), while RCM was confirmed by normal wall thickness, an LA/Ao ratio  $>1.5$  on M-mode, and an E/A ratio  $>2$  on pulsed-wave Doppler echocardiography (Locatelli *et al.*, 2018).

## RESULTS AND DISCUSSION

A total of 2,872 cats were presented for various ailments to Super-Speciality Veterinary Hospital during the study period. Among 164 cats suspected and screened for cardiac diseases, 9.76 % had cardiomyopathy. The HCM accounted for 6.10 % (10/164) and RCM for 3.66 % (6/164). Within the diseased population (n=16), HCM constituted 62.5 % (10/16), while RCM accounted for 37.5 % (6/16). The prevalence of HCM among screened cats was significantly higher than that of RCM. This distribution closely mirrored earlier studies by Ferasin *et al.*

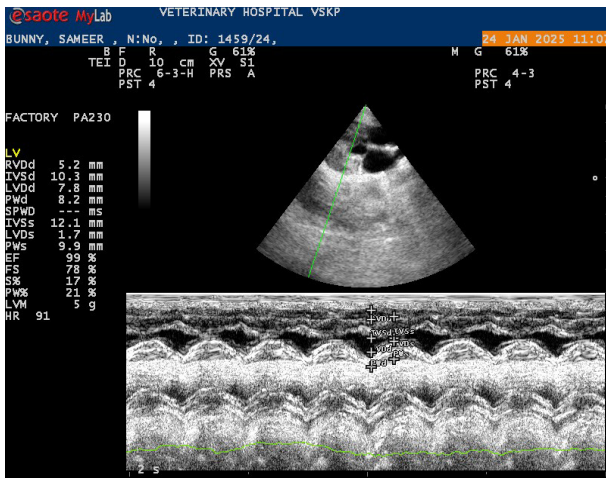
(2003) and Riesen *et al.* (2008), which also found HCM to be the most prevalent cardiomyopathy. The overall prevalence of cardiac disease in the total presented cases was 0.56 % (16/2872).

Persian cats demonstrated a notable predisposition to cardiomyopathy, accounting for 62.5 % (10/16) of cases with a remarkable 80.0 % (8/10) of HCM cases in this study. This may be due to the preference for this breed among cat owners in the area or the mode of inheritance from inbreeding. This finding resonates with Trehiou-Sechi *et al.* (2012) and Parzeniecka-Jaworska and Garncarz (2017), who also highlighted Persian cats vulnerability to cardiac diseases, particularly HCM. Non-descript cats (37.5%, 6/16) showed a higher occurrence of RCM (66.6%, 4/6) compared to Persian cats (33.3% 2/6), which may be due to their larger population in India. This finding correlated with Kimura *et al.* (2016) and Locatelli *et al.* (2018), who reported that RCM was more prevalent in domestic shorthair cats.

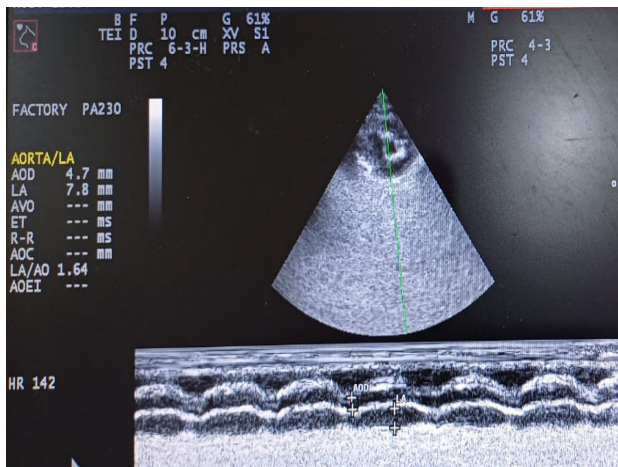
Cardiomyopathy was most prevalent in the 5-10 years age group (75%, 12/16) followed by 1-5 years (18.75%, 3/16) and 10-18 years (6.25%, 1/16), which was consistent with Kimura *et al.* (2016), who reported a mean age of 7.3 years for heart disease diagnosis, supporting our findings of increased cardiac disease risk in middle-aged cats. Further among the 3 age groups, 70, 20 and 10 %, respectively, had HCM, and 83.3, 16.67 and 0.0 % had RCM, suggesting that cats of prime age are more vulnerable to both HCM and RCM.

Male cats represented a significantly higher proportion of cardiomyopathy cases (68.67%, 11/16) aligning with multiple prior studies. Schober *et al.* (2007), Granstrom *et al.* (2011) and Petrushko and Grushanska (2022) similarly observed a male predisposition in cardiac diseases, particularly HCM. Further among the 11 male cats, 70.0 and 66.67 % cats had HCM and RCM, while among 5 females 30.0 and 33.3 % had HCM and RCM, respectively. This male predisposition may be due to the influence of androgens, sex-linked genetic mutations, increased physical activity and stress due to indoor housing.

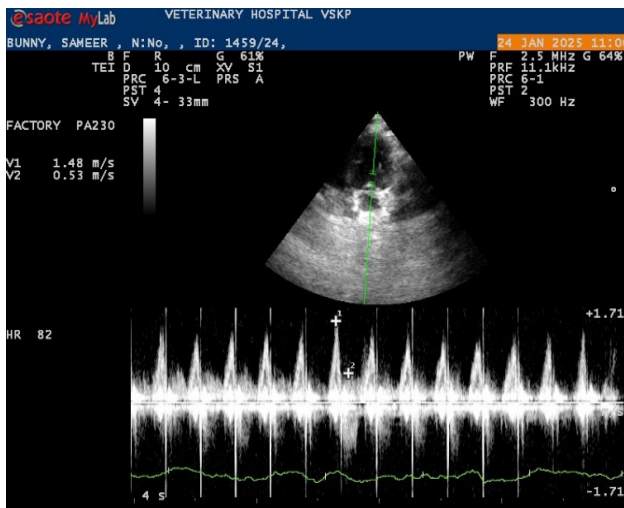
Higher prevalence of cardiomyopathy cases found in cats weighing 3-5 kg (81.25%) compared to 5-8 kg (18.75%), corroborated with Schober *et al.* (2007), who noted a correlation between body weight and cardiomyopathy. Further, among 3-5 and 5-8 kg groups, 70.0% and 30.0% cats had HCM, and 100% & 0.0% had RCM, respectively, suggesting that cats of 3-5 kg weight are more vulnerable to both HCM and RCM. However, not a single case was noted in cat weighing 1-3 kg in our study. This may be due to heavier cats experiencing greater cardiac workload, potentially increasing their risk of developing cardiac diseases over time.



**Fig. 1:** Right parasternal long-axis four-chamber view in M-mode showing thickened interventricular septum and left ventricular posterior wall



**Fig. 2:** M-mode right parasternal short-axis view at the aortic valve level in RCM cat showing LA/Ao = 1.64



**Fig. 3:** Left apical four-chamber view in Pulsed-wave Doppler showing E/A ratio = 2.79 in a cat with RCM

This study concluded that HCM was the most prevalent type of cardiomyopathy in cats, followed by RCM. HCM was more common in Persian cats, whereas RCM had a higher

occurrence in non-descript cats. Cardiomyopathy was most frequently diagnosed in cats aged 5 to 10 years, with a higher prevalence in males and in cats weighing between 3 and 5 kg.

## ACKNOWLEDGEMENT

We are grateful to Dean, College of Veterinary Sciences, Sri Venkateswara Veterinary University, Tirupati, Andhra Pradesh for the facilities provided.

## REFERENCES

- Boon, J.A. (2011). *Veterinary Echocardiography*. John Wiley & Sons, pp. 359-400.
- Cote, E., MacDonald, K.A., Meurs, K.M., & Sleeper, M.M. (2011). *Feline Cardiology*. John Wiley & Sons, pp. 103-108.
- De Madron, E., Chetboul, V., & Bussadori, C. (2015). *Clinical Echocardiography of the Dog and Cat*. Elsevier Health Sciences, pp. 200-222.
- Ferasin, L., Sturgess, C.P., Cannon, M.J., Caney, S.M., Gruffydd-Jones, T.J., & Wotton, P.R. (2003). Feline idiopathic cardiomyopathy: A retrospective study of 106 cats (1994-2001). *Journal of Feline Medicine and Surgery*, 5(3), 151-159.
- Granstrom, S., Nyberg Godiksen, M.T., Christiansen, M., Pipper, C.B., Willesen, J.T., & Koch, J. (2011). Prevalence of hypertrophic cardiomyopathy in a cohort of British Shorthair cats in Denmark. *Journal of Veterinary Internal Medicine*, 25(4), 866-871.
- Kimura, Y., Fukushima, R., Hirakawa, A., Kobayashi, M., & Machida, N. (2016). Epidemiological and clinical features of the endomyocardial form of restrictive cardiomyopathy in cats: A review of 41 cases. *Journal of Veterinary Medical Science*, 78(5), 781-784.
- Locatelli, C., Pradelli, D., Campo, G., Spalla, I., Savarese, A., Brambilla, P. G., & Bussadori, C. (2018). Survival and prognostic factors in cats with restrictive cardiomyopathy: A review of 90 cases. *Journal of Feline Medicine and Surgery*, 20(12), 1138-1143.
- Luis Fuentes, V., Abbott, J., Chetboul, V., Côté, E., Fox, P.R., Häggström, J., & Stern, J.A. (2020). ACVIM consensus statement guidelines for the classification, diagnosis, and management of cardiomyopathies in cats. *Journal of Veterinary Internal Medicine*, 34(3), 1062-1077.
- Parzeniecka-Jaworska, M., & Garnarcz, M. (2017). Prevalence of heart disease in a population of domestic cats in Poland: A retrospective study. *Medycyna Weterynaryjna*, 73(10), 647-650.
- Payne, J.R., Borgeat, K., Connolly, D.J., Boswood, A., Dennis, S., Wagner, T., & Luis Fuentes, V. (2013). Prognostic indicators in cats with hypertrophic cardiomyopathy. *Journal of Veterinary Internal Medicine*, 27(6), 1427-1436.
- Petrushko, A., & Grushanska, N. (2022). Prevalence of feline cardiomyopathy phenotypes and arterial thromboembolism. *Science Rise: Biological Science*, 4(33), 35-43.
- Riesen, S.C., Kovacevic, A., Lombard, C.W., & Amberger, C. (2008). Prevalence of heart disease in symptomatic cats: An overview from 1998 to 2005. *Companion Animal Practice*, 18(1), 15-20.
- Schober, K.E., Maerz, I., Ludewig, E., & Stern, J.A. (2007). Diagnostic accuracy of electrocardiography and thoracic radiography in the assessment of left atrial size in cats: comparison with transthoracic 2-dimensional echocardiography. *Journal of Veterinary Internal Medicine*, 21(4), 709-718.
- Trehiou-Sechi, E., Tissier, R., Gouni, V., Misbach, C., Petit, A.M.P., Balouka, D., & Chetboul, V. (2012). Comparative echocardiographic and clinical features of hypertrophic cardiomyopathy in 5 breeds of cats: A retrospective analysis of 344 cases (2001-2011). *Journal of Veterinary Internal Medicine*, 26(3), 532-541.

