



History of Heart Disease in Cavalier King Charles Spaniel Breed Dogs

Melahat TOKER**Department of Physiology, Faculty of Health Sciences, Yuksek Ihtisas University, Ankara, Turkey****Corresponding Author:** Melahat Toker, Department of Physiology, Faculty of Health Sciences, Yuksek Ihtisas University, Ankara, Turkey.**Received:** September 09, 2025**Published:** October 10, 2025© All rights are reserved by **Melahat TOKER**.**Abstract**

Cavalier King Charles Spaniels are breeds that are prone to myxomatous mitral valve disease (MMVD) with different coat colors and combinations. Acquired heart disease is common in these dogs, and mitral valve disease accounts for 75-80% of all heart disease. Small dogs may be more affected by mitral valve disease than larger dogs. The rate of heart disease in these dogs increases with age, and even in geriatric dogs the risk rate can be 100%. In our studies, there is no statistically significant gender-related risk. In dogs, the enlargement of the heart, the decrease in effort capacity, coughing and later difficulty in breathing require veterinary control. The gold standard for the diagnosis of heart diseases is echocardiography.

Keyword: Cavalier King Charles Spaniel; Dog; Echocardiography**Introduction**

Mitral valve disease is encountered approximately twenty times more frequently in Cavalier King Charles Spaniels (CKCS) than in other breeds of dogs [1,4]. Myxomatosis of the mitral valve structures (MMVD) is the most common acquired heart disease in these dogs. Early onset of the disease carries a high risk and is more likely to progress. Mitral valve disease in CKCS increases by approximately 10% each year, and by the age of five, 50% develop heart failure, with the disease severity increasing with age [2,17]. In these dogs, coughing, difficulty breathing, fatigue, loss of appetite and fainting are among the most common symptoms of heart disease. One of the most common symptoms is coughing, especially at night or after exercise. In almost all CKCS, the mitral valve degenerates at the end of their lives and their heart murmurs gradually worsen, leading to severe heart failure.

Cavalier lines worldwide are polygenic (affected by more than one gene) and therefore more prone to mitral valve disease [4,19]. Mitral valve disease is a serious, progressive heart disease caused by the deterioration of one or both heart valves. The mitral valve structure can be myxomatous or present with structural disorders (calcification, prolapse, fibrosis, thickening). In the mitral valve; chronic valve (valvular) insufficiency, acquired valve insufficiency, acquired valve degeneration, chronic valve degeneration, chronic valve fibrosis, degenerative mitral valve disease (DMVD), endocardiosis can occur [7,8].

The initial diagnosis of patients is made by detecting a heart murmur with a stethoscope and can be confirmed by a heart ultrasound (echocardiography) examination (Figures 1,2). Other diagnostic tools such as ECG (electrocardiogram) recordings, chest radiography, blood tests and complete physical examination can also

be used to determine the severity of the disease and the presence of heart failure.

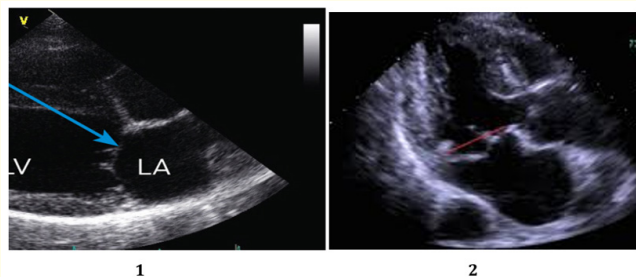


Figure 1,2: Echocardiographic image of mitral valve degeneration in Cavalier King Charles spaniels.

The "hinge" on the heart's mitral valve can loosen and gradually fail along with the valve leaflets, causing a heart murmur (when blood leaks from the valve between heartbeats) and then congestive heart failure [3,5]. Early diagnosis of CKCS when they are one or two years old is important for a more prosperous life in old age, as heart disease is the leading cause of death in this breed [2].

Materials and Methods

18 Cavaliers that came to clinics and hospitals were included in the study, they were cute and cute dogs weighing between 5.9 and 8.2 kg on average, black and brown in color, with chestnut colored ears and eye area on their white fur. Although their facial features were very similar, they were all different. Black and Brown, King Charles Spaniel is also called "King Charles". These breed dogs were very affectionate, wanted to play immediately, jumped on, were extremely patient and did not bark much. Their ability to bond with larger and smaller dogs was quite strong figure 3.

Findings

After the complaints of the cavaliers who came to our clinics or hospitals were received from the relatives of the patients, physical examination, X-ray, ECG and heart ultrasound (echocardiography) were performed. It was determined that there were clinical findings such as pulmonary edema and cardiac murmur sounds, along with symptoms of dyspnea and exercise intolerance that increased in proportion to the severity of the disease.



Figure 3: Cavalier King Charles spaniel.

In the study, echocardiographic examinations performed on dogs with mitral valve insufficiency revealed the development of various rhythm-conduction problems such as sinoatrial block, atrial tachycardia and atrial fibrillation. Of those with serious cardiac problems, 18 were included in our study. Cardiac ultrasound revealed severe mitral valve degeneration in those over 5 years of age. Cardiac arrhythmia was detected in 3 of our dogs along with advanced mitral insufficiency due to mitral valve cooperation disorder. The left heart chambers (ventricle-atrium) of 9 of our patients were dilated. In mitral valve degeneration, bileaflet prolapse was seen in 4 of our dogs, single leaflet prolapse in 8 of our dogs, annular calcification and mild thickening were seen in 5 of our dogs. Segmental wall defect was observed in 2 of the dogs over 8 years old, spontaneous contrast due to arrhythmia (SEC) in 3 of them, and left atrial thrombus in 1 of them.

In the majority of cases, mild tricuspid valve insufficiency was observed, and in 6 cases, mild aortic valve insufficiency was observed. In congenital interatrial septum, patent foramen ovale (PFO) was observed in 2 cases. In some cases, pleural effusion was observed with occasional pericardial effusion.

Discussion

CKCSs may be more prone to mitral valve disease, which can lead to heart failure, than other dogs. It is seen in many Cavaliers at some point in their lives and is the most common cause of death [1,13]. Cardiac screening is recommended for Cavaliers once a year

starting at age one for heart murmurs. Dogs diagnosed with mitral valve disease (MVD) at an early age will live their lives with cardiac problems. It is also rare for a 10-year-old Cavalier to not have a heart murmur.

Although heart disease is common in dogs, with one in 10 of all dogs eventually developing heart problems, Cavaliers are around 20 times more likely to develop mitral valve disease than other breeds. While most Cavaliers show some signs of the disease by the age of 10, their welfare lives mask their illness, causing respiratory and other difficulties, with severe discomfort due to shortness of breath and coughing.

A survey by the UK Kennel Club found that 42.8% of deaths in Cavalier King Charles Spaniels were cardiac related [15,16]. If the animals were not put to sleep, death was recorded due to chronic heart failure.

Studies in the UK and US have shown that the percentage of CKCS who develop the heart murmurs typical of mitral valve disease increases by approximately 10% with each year of age. Therefore, approximately half of all Cavaliers will have a murmur by the time they are 5 years old (Swift 2009) and nearly all Cavaliers surviving 10 years later will have at least a low-grade murmur. If this figure is representative of the worldwide prevalence, it would mean that hundreds of thousands of dogs worldwide are affected by the condition.

Although the initial diagnosis in Cavalier King Charles spaniels is made with a stethoscope, echocardiography is the gold standard for patient follow-up. Heart ultrasound can evaluate heart size, heart wall thickness, chamber size, direction and speed of blood flow, function and appearance of valves. Structural abnormalities or blood clots in the heart are evaluated in detail.

We believe that the first step in determining the severity of the disease and the presence of heart failure is physical examination, ECG, blood tests, chest X-ray and most importantly echocardiography.

Our studies aim to make earlier routine diagnosis of mitral valve disease before a heart murmur develops. Such studies aim to measure the concentrations of circulating hormones -natriuretic peptides- secreted by regions of the heart that regulate sodium ex-

cretion in the urine. High levels of these natriuretic peptides in the blood are found in dogs with heart problems and when the heart has to work harder, for example due to mitral valve leakage [14,15]. However, although testing for these peptides is not invasive, it has been shown that their measurement offers a way to diagnose mitral valve disease significantly earlier than listening to a heart murmur.

Myxomatous mitral valve disease (MMVD) is the most common acquired heart disease in dogs, accounting for 75-80% of all heart disease. Small dogs are predisposed to MMVD, but larger dogs can also be affected. Increasing age is associated with a higher risk, with 100% of geriatric dogs diagnosed in susceptible breeds reported. Males are overrepresented in studies, but no statistically significant risk is associated with gender [9,12].

Studies have repeatedly shown that Cavalier King Charles Spaniels (CKCS) have a particularly high incidence of MMVD and an early onset of the disease in many different countries, including France, Sweden, Denmark and the UK. CKCSs have also been shown to be at higher risk for disease progression.

Based on the percentage of all dogs registered with microchips in the UK being Cavalier King Charles Spaniels, they estimate that the population size of this breed in the UK could be around 200,000 [10,18].

Conclusion

It has been observed that cardiac diseases related to MMVD disease can be diagnosed and followed up easily and quickly by echocardiography.

Ethics Statement

There was no ethics committee report because patients came from different clinics. At the request of their relatives, echocardiography was performed. The relatives signed the consent forms at the PET clinics.

Disclosure

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Conflict of Interest: The author declares that he has no conflicts of interest.

Author Contributions

- MT contributed to the design of all work.
- Data were collected and analyzed. MT wrote the first draft of the article.
- He contributed to the critical revision of the article, read it, and approved the final version.

Author Contributions

Dr. Melahat Toker

There is no ethics committee report in our article because echocardiography was performed with the consent of the patients' owners and upon their request.

Bibliography

1. "Cavalier King Charles Spaniel Dog Breed Information". *American Kennel Club* (2023).
2. O'Neill DG., *et al.* "Longevity and mortality of dogs owned in the UK". *Veterinary Journal* 189.3 (2013): 638-643.
3. Lewis T., *et al.* "Heritability of premature mitral valve disease in Cavalier King Charles Spaniels". *Veterinary Journal* (2010a).
4. Orton EC. "Mitral Valve Surgery: Current Veterinary Practice. 1st International Symposium on Canine Valvular Diseases, Paris (2004).
5. Gürgen G and Serttaş S. "Performance Comparison of Machine Learning Algorithms in Early Diagnosis of Heart Failure". *Euroasia Journal of Mathematics, Engineering, Natural and Medical Sciences International Indexed and Refereed* 10.20 (2023): 165-174.
6. Griffiths LG., *et al.* "Evaluation of techniques and outcomes of mitral valve repair in dogs". *Journal of the American Veterinary Medical Association* 224 (2004): 1941-1945.
7. Häggström J. "New perspectives on degenerative mitral valve disease in dogs". *Veterinary Clinics of North America: Small Animal Practice* 3 (2004): 1209-1226.
8. Häggström J. "Etiology and Pathophysiology of Myxomatous Mitral Valve Disease in Dogs". *World Small Animals Association Conference Proceedings Rhodes* (2004).
9. Kasar SK and Erzincanlı. "Evaluation of Medication Adherence in Patients with Heart Failure". *Turkish Journal of Thoracic and Cardiovascular Surgery* 12.28 (2021): 94-99.
10. Kazdağlı H and Özel HF. "Evaluation of Heart Rate Variability Parameters in Patients with Congestive Heart Failure and Atrial Fibrillation". *Research Article Cbu-Sbed* 11.3 (2024): 287-294.
11. Puppy-Training-at-Home. "Cavalier King Charles Spaniel Training and Cavalier Dog Breed Information (2009).
12. Lewis T., *et al.* "Optimization of breeding strategies to reduce the prevalence of hereditary diseases in purebred dogs". *Animal Welfare* 19.S (2010b): 93-98.
13. Lundin T and Kvart C. "Evaluation of the Swedish breeding programme for Cavalier King Charles Spaniels". *Acta Veterinaria Scandinavica* 52 (2010): 54.
14. MacDonald KA., *et al.* "Brain Natriuretic Peptide Concentration in Dogs with Heart Disease and Congestive Heart Failure". *Journal of Veterinary Internal Medicine* 17.2 (2003): 172-177.
15. Moonarmart W., *et al.* "N-terminal pro-B-type natriuretic peptide and left ventricular diameter independently predict mortality in dogs with mitral valve disease". *Journal of Small Animal Practice* 51 (2010): 84-96.
16. Norn S and Kruse PR. "[Cardiac glycosides: From ancient history to Withering's fox glove and endogenous cardiac glycosides]". *Dansk Medicinhistorisk Arbog* (2004): 119-132.
17. CavalierHealth. "Mitral Valve Disease and Cavalier King Charles Spaniels" (2009).
18. Rishniw M. "Syncope with Mitral Valve Disease". Medical FAQ. VIN Partner (2009).
19. Smith P. "Management of chronic degenerative mitral valve disease in dogs". *In Practice* 28 (2006): 376-383.