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THE PREVALENCE OF CONGESTIVE CARDIOMYOPATHY in the Irish Wolfhound population in the Netherlands

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INTRODUCTION

It may be possible to increase life expectancy of the Irish Wolfhound, according to IERDIE, the Dutch Association of Irish wolfhound breeders. This Association believes that deterioration of cardiac function in older Wolfhounds is the most important cause of the short life-span time of dogs belonging to this breed. I was asked to consider this problem and I advised that the first step should be to investigate the prevalence of the most important cardiac disease, i.e. congestive or dilative cardiomyopathy (CCM or DCM). My presentation includes a description of this syndrome, followed by the investigative approach to be chosen. The presentation will be concluded by describing the possible approaches to achieve a healthier Irish Wolfhound with a longer life expectancy.

DESCRIPTION OF THE SYNDROME

Normal cardiac function

The heart is the centre of the circulation of the blood. Two systems may be distinguished, i.e. the pulmonary circulation system which normally has a low pressure, and the systemic circulation which has a higher pressure. The functioning of the heart is determined by four important factors which are preload, afterload, inotropy, and rate and rhythm. In cardiac failure, any of these factors may be responsible for the inappropriate functioning of the heart. If cardiac function diminishes this may be life threatening because life depends upon adequate transport of substances essential for metabolism of the individual cells.

Congestive cardiomyopathy

This term indicates a progressive loss of ability of the heart to contract properly for maintenance of the normal blood circulation. In the clinical literature it has been reported that primary cardiomyopathy indicates that the etiology is unknown. In secondary cardiomyopathy the development of CCM may be due to the end stage of toxic (doxorubicin) and immunologic processes, metabolic disturbances, or bacterial, viral or protozoan infections, but it may also develop experimentally in healthy dogs after stimulating the heart during several days with an abnormally high heart rate.

The disease usually occurs at 4 to 6 years, but has been diagnosed at 6 months to 14 years. Predominantly male dogs of giant breeds are affected. Therefore a genetic predisposition may play an important role. CCM results in signs of cardiac failure.

Exercise intolerance, dyspnea, coughing, ascites, pleural effusion, and even syncopes with or without exercise can develop, the ultimate outcome being death. It is possible for the companion animal clinician to diagnose the disease, using physical examination and electrocardiography, but echocardiography is most helpful.

Treatment and prevention

There is no specific treatment, because myocardial tissue is replaced by fibrous tissue and is therefore lost. Treatment of arrhythmias, diuretic therapy, inotropic stimulation, and decreasing the afterload may have a favourable effect in individual patients. Preventive measures cannot be taken unless the etiology is known. Therefore the IERDIE has initiated a soundly based scientific investigation of the prevalence of this disease in the Irish Wolfhound population in The Netherlands. If successful this approach may also be followed in other countries.

Prevalence investigation

In the development of this study three conditions had to be fulfilled:

- 1. Scientifically correct**
- 2. Internationally applicable**
- 3. Affordable**

After discussing the problem with a statistician we learned that sample taking at random would meet our above mentioned purposes. Because there are approximately 1000 wolfhound dogs in our country 100 dogs need to be examined. If the prevalence of the disease is between 3.5 to 15 %, the findings in 100 dogs has a reliability in the complete population of 95 %. This has been used to determine this sample of 100 dogs. If fewer than 100 dogs are examined, the accuracy would be lower at this prevalence. If the prevalence is greater than 15 %, the sample would have to be greater. For reliable results, random sampling is necessary. IERDIE will provide a list of the identification numbers of the Wolfhounds from which sampling at random can be undertaken by a computerised procedure. The selected owners will be informed and later they will be asked to present the dog for examination, for which the time can be chosen by this owner to a certain extent. The dog will be examined in the Utrecht University Companion Animal Clinic. The examination will include a physical examination, ECG, echocardiogram, and a blood sample.

Discussion

The results should reveal whether CCM is a real problem in this breed. If it is, clustering of the disease in certain family lines can also be evaluated. The usefulness of the results is determined by their reliability. Therefore it is essential that all owners respond to the invitation to have the dog examined. It is clear that the results have to be kept confidential and will only be presented anonymously. If certain breeding measures are needed, action must be decided by the board in co-operation with the Association members. Although life expectancy is not the same as CCM, this investigation will obtain more detailed information about the wolfhound breed in our country. The breed will benefit from this knowledge and the well-being of the individual dogs can be improved.

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