ATHLETE HEART OR DCM IN A SPRINGER SPANIEL FAMILY?

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An athletic heart (AH) indicates the presence of morphological (increased LV diameter and wall thickness') and functional cardiac changes (reduced FS, increased SV, bradycardia) as a result of strenuous repetitive exercise. In humans and horses training also influences the development of atrioventricular valvular (AV) regurgitation, but this finding is less clear in dogs. The dilated form of cardiomyopathy (DCM) is characterised by impaired systolic function (reduced FS, EF) of the ventricular myocardium leading to progressive dilation of first the ventricle(s) and later the atria. AV valve insufficiency develops secondary to annular stretch and dilation. English Springer Spaniels (ESS) are known to develop DCM and they tend to show a rapid course. The resting echocardiogram of endurance athletes may be confused with early dilated cardiomyopathy (DCM), and the aim of the study was to show that this might also be the case in some dogs.

This study describes the long-term follow-up (4 y) of a family of non-working English Springer Spaniels (n=5; 3 females/ 2 males, age 2-4y) with different levels of fitness. The very fit dogs (n=3) showed low heart rates (mean 64 BPM, sinus arrhythmia) but none of them were overtly bradycardic. Two out of 3 had audible systolic murmurs at the level of the left heart apex (max grade 2/6). Electrocardiography excluded the presence of atrial standstill, which has been associated with the development of DCM in Springer Spaniels. The fit dogs showed initial echocardiographical characteristics of early DCM, where the non-fit dogs had normal echocardiographical parameters. All fit dogs had LVDd in the higher range of normal, LVDs out of reference range, normal ventricular wall thicknesses, but FS < 25 % (18-23 %). Obvious mitral and tricuspid valve regurgitation was present in all fit dogs, despite the AV valves having a normal appearance. No atrial enlargement was visible. Pulmonic insufficiency was visible in 2/3 dogs. Plasma taurine levels were within reference range (>50 nmol/ml). At long-term follow-up none of the dogs showed clinical signs. One of the non-fit dogs had now reached the level of fitness of the fit dogs. At this time all fit dogs had audible murmurs over the left apex (1-3/6), and one dog had an audible murmur over the tricuspid valve. Exercise did not make the murmurs disappear. Echocardiographically, LVDd had now further increased exceeding reference range, as did LVDs. FS had continued to decline in 2 dogs (min 13 %), but remained stable (<25 %) in the others. Mitral and tricuspid regurgitation was more marked in all dogs without associated atrial enlargement.

In conclusion, traditional echocardiography might be very misleading in the differentiation between AH and DCM. The dog's physical condition should be taken into consideration and long-term follow-up is advised before condemning these animals.