

Dear NTCA Members,

We are pleased to pass along the results of a study about the heart size of Norwich terriers. The study was conducted by Dr. Kelley Thieman and Dr. Bryden Stanley, and their colleagues. The title is: "Norwich terriers possess a greater vertebral heart scale than the canine reference value." The article will be published in the journal *Veterinary Radiology & Ultrasound*.

The sample population consisted of 61 Norwich terriers. Many of these dogs were study patients in our CHF NTUAS Study. You may remember that chest x-rays were required for our study. The vertebral heart scale has been a useful screening tool for veterinarians because it's quick to use and requires only one radiograph. It can help in the diagnostic process to determine heart disease, such as cardiomegaly (a progressive disease where the heart is abnormally enlarged, thickened, and/or stiffened, limiting the heart muscle's ability to pump blood). The scale was introduced by Buchanan and Bücheler in 1995, based on a study of 100 dogs. The dogs were of various breeds, but no more than 4 dogs of any one breed were included. Buchanan and Bücheler determined the mean (average) vertebral heart scale to be  $9.7 \pm 0.5$  in these 100 normal dogs.

Dr. Stanley and Dr. Thieman found that the vertebral heart scale for Norwich terriers (without evidence of cardiac disease) was  $10.6 \pm 0.6$  which is significantly greater than the canine reference value of  $9.7 \pm 0.5$  on the original scale. Healthy Norwich terriers with a high body condition score were more likely to have a higher vertebral heart scale. There was no significant difference in vertebral heart scale between Norwich terriers with evidence of respiratory disease compared to those without evidence of respiratory disease. Dr. Stanley and Dr. Thieman conclude by saying that their study of Norwich terriers supports the need for breed specific reference ranges for the vertebral heart scale because the use of generic reference values may result in false diagnoses of cardiomegaly.

We can release the Abstract (a summary limited to 250 words) prior to publication. The full manuscript will be made available to you when published. In the meantime, we have the publisher's proof and permission to provide summary information to our members.

#### **Abstract**

The purpose of this retrospective, observational study was to determine whether the normal vertebral heart scale values published by Buchanan and Bücheler for lateral radiographs are applicable to the Norwich terrier. Secondary objectives were to determine if clinical signs of respiratory disease, age, gender, weight, body condition score, recumbency, or thoracic depth-to-width ratio had any influence on vertebral heart scale measurement in this breed. The electronic medical record systems of two universities were reviewed and Norwich terriers were included in the study if they had orthogonal thoracic radiographs performed and no historical or radiographic evidence of cardiopulmonary disease. Sixty-one client-owned, Norwich terrier dogs with no clinical signs of cardiovascular disease were evaluated. A vertebral heart scale was calculated for each patient. The vertebral heart scale for Norwich terriers without evidence of cardiac disease ( $10.6 \pm 0.6$ ) was found to be significantly greater than the canine reference value of  $9.7 \pm 0.5$  initially established by Buchanan and Bücheler. No significant correlation was found between clinical signs of respiratory disease, sex, age, thoracic depth-to-width ratio or lateral recumbency and vertebral heart scale. Norwich terriers with a body condition score  $\geq 6$  had a significantly higher vertebral heart scale than those with a BCS  $\leq 5$ . The vertebral heart scale is a rapid, straightforward and useful tool for objectively evaluating canine heart size. Breed-specific ranges and body condition score need to be considered when critically evaluating the vertebral heart scale.

We are grateful to the NTUAS Study Team for their work to improve the health of our Norwich terriers, and grateful to the breeders and owners who make their work possible! Thanks.

Pertaining to the primary objectives of the NTUAS Study, the longitudinal study component is now complete. The final 2 Norwich terriers had their follow-up clinic evaluations last week. Dr. Stanley and her team are busy finalizing study results now for distribution to the membership.

Jane Schubart & Susan Miller Hall  
NTCA Health Committee Co-chairs  
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