

Norwich Terriers, 11-19
Title: Small Dog, Big Heart

Owners of Norwich terriers have, on occasion, been told by their veterinarians that their dogs have large hearts. Even in the absence of any cardiac disease, this incidental finding may be alarming. A recently published article, "*Norwich terriers possess a greater vertebral heart scale than the canine reference value*," sheds light on this phenomenon.¹ Importantly, the authors conclude, "The findings from our study support the necessity for breed-specific reference ranges, as use of generic reference may result in false diagnosis of cardiomegaly." This study included only Norwich terriers, but the results may be applicable to other breeds and are summarized in this column.

The vertebral heart scale (VHS) is a widely used reference developed in 1995. It requires a single radiograph and can be performed by any practitioner. To develop the scale, Buchanan and Bücheler assessed 100 healthy dogs with no more than four of any one breed represented, and determined the mean canine VHS to be 9.7 ± 0.5 . Although increasing in popularity, many veterinarians have limited experience with Norwich terriers. Dr. Kelley M. Thieman Mankin (Texas A&M University) and Dr. Bryden Stanley (Michigan State University) are exceptions! Both are investigators on the Canine Health Foundation (CHF) Norwich Terrier Upper Airway Syndrome (NTUAS) study and have assessed many Norwich terriers. Screening criteria for the NTUAS study included thoracic radiographs prior to enrollment in order to rule out other abnormalities. During this process, Dr. Thieman Mankin and Dr. Stanley noticed that the Norwich terrier radiographs often revealed a cardiac silhouette greater than expected and what appeared to be a subjectively enlarged heart.

To test the hypothesis that Norwich terriers without clinical evidence of cardiac disease have a mean vertebral heart scale greater than the mean canine VHS established by Buchanan and Bücheler, they measured radiographs of 61 Norwich terriers from their two universities, (most were dogs previously screened for the NTUAS study). Using the same technique described by Buchanan and Bücheler, they found the mean VHS to be 10.6 ± 0.6 , which is significantly greater than the original canine reference value of 9.7 ± 0.5 . The Norwich terrier sample VHS was not significantly correlated with age, sex, thoracic depth-to-width ratio, or clinical signs of respiratory disease. However, the investigators found that healthy Norwich terriers with a high body condition score were more likely to have a high vertebral heart scale than those with a low body condition score.

For Norwich terriers, establishment of an accurate vertebral heart scale reference range will help veterinarians reach accurate diagnosis in the clinical setting and prevent a misdiagnosis of cardiomegaly, which could result in inappropriate management of upper airway disease. Further research is recommended for other breeds in order to establish updated, published breed-specific reference values that will provide veterinarians with an accurate reference.

¹Taylor CJ, Simon BT, Stanley BJ, Lai GP, Thieman Mankin KM. Norwich terriers possess a greater vertebral heart scale than the canine reference value. *Vet Radiol Ultrasound*. 2019;1-6. <https://doi.org/10.1111/vru.12813>

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