



RESEARCH PROGRESS REPORT SUMMARY

Grant 02232-MOU: Characterization of Upper Airway Syndrome in Norwich Terriers

Principal Investigator: Dr. Bryden J. Stanley, BVMS

Research Institution: Michigan State University

Grant Amount: \$74,496.78

Start Date: 11/1/2015 **End Date:** 10/31/2017

Progress Report: End-Year 1

Report Due: 10/31/2016 **Report Received:** 11/1/2016

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Original Project Description:

Breeders have long known of upper airway issues in Norwich Terriers (NTUAS) while veterinary awareness and recognition of NTUAS, has lagged behind. Signs of disease can vary from mild airway noise to severe distress with heat and exercise intolerance, and death. Descriptions of NTUAS have focused on everted laryngeal sacculles (outpouched laryngeal tissue), likening it to issues seen in brachycephalic dogs. However, recent evidence shows changes in the larynx that are not seen in brachycephalic dogs: redundant tissue at the top of the larynx, and narrowing of the larynx behind the glottis. The entire upper airway needs to be clearly described for NTUAS, and it is likely that the condition is separate from brachycephalic airway syndrome, with distinctive, primary changes arising in the larynx.

In this study, NTUAS will be characterized in detail through comprehensive history, oral examination and upper airway endoscopy in 150 US Norwich Terriers. Results will be used to create a NTUAS severity grading system. A subset of 25 of the dogs will additionally undergo computed tomography and nasal airflow measurements. Results will be compared for 25 Norfolk Terriers, 25 brachycephalic and 25 mesaticephalic dogs of similar ages from a separately funded study. Identifying the contributory components of NTUAS is the first step in determining prognosis and evaluating treatment options. This work will lay the groundwork for future research to follow the youngest dogs in the study throughout their lives, and to examine the effect of time and treatment on NTUAS.



Funding for the research is provided through the efforts and generosity of Norwich Terrier Club of America. The AKC Canine Health Foundation supports this effort and will oversee administration of funds and scientific progress reports.

Publications:

None at this time.

Report to Grant Sponsor from Investigator:

The study is still in recruitment but the enrollment has followed the NTUAS Study time schedule appropriately. UCD and Texas A&M have both already completed their numbers of enrolled. UPenn will start their first Study day on October 31st, followed by 25 recruited cases which will be scheduled to be seen in 2016 Fall, throughout 2017 Spring. MSU, the primary institution, is still accruing cases. With respect to age strata, the recruitments have fulfilled all the age groups except puppies and the 5-7 year age group. MSU will accept dogs into the data set outside of these age groups, but the NTUAS Study will not be able to fund these dogs. As the primary institution, MSU has moved on to performing CT of head/neck and rhinomanometry (airflow measurement through the nasal cavity) on several Norwich Terriers which were selected randomly in Study group and Norfolk Terriers in Control group. We have not formally analyzed the results of the laryngoscopic examinations at this stage, but we can say that the larynx is widely affected within the breed. We also believe that the Norwich Terriers who showed their signs at younger age (<1 year of age) have higher incidence of presenting more severe clinical signs or laryngoscopic findings. The final results of histopathologic examinations of resected tissues (e.g., saccules) are still pending. But with the comparison to other breeds, the preliminary results showed that there was no difference in histology between Norwich Terriers and brachycephalics.

It is also too early to report any results from the rhinomanometry and CT data, although early subjective comparison of the CTs show anatomical laryngeal differences in the NT compared to other breeds, and no evidence of excessive nasal turbinates or stenotic nares which are seen in the brachycephalic breeds.