

NTUAS Study Update

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I am very pleased with the progress we have made. The study's primary objective is to document and **describe the clinical presentation and detailed upper airway endoscopy in Norwich Terriers**. To do this, we are conducting standardized history questionnaires, physical examinations and upper airway endoscopy in 150 Norwich Terriers, in stratified age groups. The enrollment has followed the time schedule. UCD and Texas A&M have completed study their visits but both Drs. Johnson (UCD) and Thieman (TAMU) are more than happy to examine more dogs if they are enrolled. UPenn had their first study day on October 31st. In total, we have examined 115 and 16 more are scheduled for a study visit. We need a few more Norwich, in age groups 5-7 years and >8 years.

Also, 25 Norfolk Terriers and 25 brachycephalics (from another study) will serve as comparison groups. We have seen 5 Norfolk to date and one is scheduled to be seen. So, we need more Norfolk Terriers! The Norfolk participants will be seen at MSU where blood work, chest x-rays, complete physical examinations, laryngeal examination, upper airway endoscopy and head CT are covered by the study grant. Owners can have those results sent to their regular veterinarians for documentation. Please spread the word! Contact Dr. Grace Lai for more information and to enroll Norfolk or Norwich Terriers at laipeich@cvm.msu.edu

We are aiming to complete all study visits by August 2017. These data will then be used to develop a scoring system for severity of NTUAS. We have not formally analyzed the results of the laryngoscopic examinations at this stage, as all 3 major investigators have to look at all the studies, but we can say that the larynx is widely affected within the breed, with unique anatomical changes. 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 and laryngoscopic findings. It is important to understand that at this stage of the study, without analysis of the data, we cannot say what a "normal" larynx looks like in a Norwich Terrier.

At MSU we have performed CT scans of the head on several Norwich Terriers which were selected randomly in the study group (Study Objective 2). It is also too early to report any of the mathematical results from the CT data, early subjective comparison of the CTs show no evidence of the excessive nasal turbinates or stenotic nares which are seen in the brachycephalic breeds. Due to technical difficulties and inconsistent performance of the pneumotachometer (airflow pressure measuring machine), we have had to forgo rhinomanometry in this study.

Thus far there are 31 resected tissue samples sent to pathology (44 from NT, 7 from brachycephalic dogs). In depth analysis is pending, but the preliminary results show some mild differences between Norwich Terriers and brachycephalics.

The following presentations have been given or accepted:

1. Upper airway studies at MSU – what you can do to help. Presented to the MSU hospital staff and faculty at the beginning of the study. Nov. 2015
2. Clinical and Laryngoscopic Characterization of Norwich Terrier Upper Airway Syndrome (NTUAS): Preliminary Results in 61 dogs. Poster Presentation. Veterinary Comparative Respiratory Symposium (VCRS). Sept. 2016.
3. Upper airway studies at MSU- Grand Rounds at UC Davis teaching hospital, presented staff and faculty. Apr. 2017
- 4 . Clinical and Laryngoscopic Characterization of Norwich Terrier Upper Airway Syndrome (NTUAS): (updated preliminary results). Society of Veterinary Soft Tissue Surgery (SVSTS). June 2017.

We are extremely pleased with our progress so far and the support of all of the members and owners who have enrolled their dogs and/or supported the study financially – thank you! I am looking forward to presenting more final formal results to your membership in October at the health seminar, and discussing how to disseminate the results to immediately to benefit Norwich Terriers, as well as future study steps.

Best regards,
Bryden