Brachycephalic syndrome in dogs

Summary / Zusammenfassung

The pathophysiology of the brachycephalic syndrome is not well revealed. Most researches propose that a narrow nostril causes all problems, others investigated on the special nasal anatomy in order to categorize dogs into riks groups. However, Norwich and Norfolk Terriers, which have normal (mesaticephalic) noses, show the same disease pattern as brachycephalic dogs. It is therefore not clear, where and how the stenosis occurs.

In the first part of the project, the posterior rhinomanometry was proven to be reproducible with a group of healthy dogs. Skull measurements on 64 healthy brachycephalic and non-brachycephalic dogs revealed an alternative method to assess the brachycephaly (S-index). The new method was chosen to classify the dogs. Rhinomanometry values if these dogs in inspiration and expiration were performed to calculate transnasal pressure differences and nasal resistance. It was shown, that brachycephalic dogs have higher values than non-brachycephalic dogs. The values were normalized to the body weight. Inspiratory pressure differences were identified to be most suitable for clinical use. Norwich terriers showed also high transnasal pressure differences. Preliminary results from brachycephalic dogs with clinical problems also revealed high pressure values.

In conclusion, transnasal pressure differences are high in dogs with the brachycephalic syndrome. This may explain a large part of the pathophysiology. It is very probable, that the shortened nose and the narrow nostrils are the main origin for the enhanced under pressure in the upper airways and that all other signs, as well as the overlong soft palate, are secondary manifestations.

A second part of the project showed, that VEGF was increased in brachycephalic dogs after short physical examination. EPO values did not change within the examination time of four hours. Current focus of the study (2008 - 2011) is on the implementation to breeding. A study on changes of the skull shape within the last 100 years on selected breeds will be conducted. It is speculated, that brachycephalic dogs were breeded towards shortened noses (smaller S-indices)

Publications / Publikationen


**Keywords / Suchbegriffe**
Dogs, stenosis, surgery, breeding, nose, respiratory tract, manometry, VEGF, EPO, brachycephalic syndrome, time evolution, history, S-index

**Project Leadership and Contacts / Projektleitung und Kontakte**
Dr. D. Koch, Dr (Project Leader) dkoch@kochbass.ch
PD Dr. S. Arnold, Prof
Prof. Dr. P.M. Montavon, Prof
Dr. Th. Wiestner, BS Ing twiestner@vetclinics.uzh.ch

**Funding Source(s) / Unterstützt durch**
Other Public Sources (e.g. Federal or Cantonal Agencies), Foundation

**In Collaboration with / In Zusammenarbeit mit**
Naturhistorisches Museum der Burgergemeinde Bern Switzerland

**Duration of Project / Projektdauer**
Jan 2001 to Dec 2011