Investigation of dystocia in Scottish Terriers by means of radiographic pelvimetry

Problems:

Caesarean section is a major issue in Scottish Terrier. The Swedish insurance company Agria shows in their statistical analysis that Scottish Terriers has a 9 times larger risk of having dystocia/labour problems compared to all breeds (Agria Pet insurance 2011).

In Denmark 58% of the litters were delivered by caesarean section in 2012-2013 (DKC register). Because of this high incidence the Health Committee in the Scottish Terrier Group in DK has requested an investigation of dystocia in a population of Scottish Terriers. It resulted in a master thesis in Veterinary Medicin by Karen Singers Johansen at the Faculty of Health and Medical Science, University of Copenhagen august 2014 (1 ).

In a Swedish study from 1999 A.Enroth et al (2 ) found that a dorsoventral flattening of the pelvis in a small group of Scottish Terriers caused problems when the foetus had to pass through the birth canal.

The Master thesis consists of two parts: A descriptive study and an analytical study

The result was done with the main focus on the pelvic dimensions of female and male Scottish Terriers.

The descriptive study aimed at determining mean pelvic-and external measurements of male and female Scottish Terriers.

The study investigate the importance of pelvic dimensions and external body parameters of the bitches in relation to dystocia. The study also sought to investigate the impact of the reproduction history of the bitches on the dystocia rate in the breed, and final investigate if correlation between external measurements and pelvic diameters could be found.

Radiographic was obtained of a total of 30 dogs in ventrodorsal and laterolateral projection.

The study found that the pelvis of the bitches that had given birth naturally had significantly longer vertical diameters that the pelvis of bitches that had given birth solely by caesarean section. Bitches that had given birth by caesarean section had a more dorsoventrally compressed pelvis and was identified as a cause of dystocia in the breed in the breed.

Furthermore the importance of the reproductive history of the bitches in relation to the dystocia frequency was investigated. The owners were asked to fill out a questionnaire concerning the reproductive history of the dog and the family of the dog. No correlations were found between dystocia and the mean size of the litters or the mean size of the puppies.

Finally external measurements of all dogs were done. It was found that the height of the bitches at the withers was positively correlated with giving birth naturally, which means that the naturally whelping bitches were generally higher than the bitches given birth solely by caesarean section. Furthermore there was a positive correlation between the hight of the bitch and the vertical diameter of the pelvis.
Caesarean section is a complication to the birth for both the mother and the puppies (3). Therefore we want to get a tool to rule out this problem. Then we can focus on increasing the pelvic size and improving the proportions in the breed. To have the necessary data to make any scientific conclusion we want to continue the study to an amount of 100 dogs. Because the Scottish Terriers are a small breed in Denmark, it is necessary to make the study in cooperation with other countries. By cooperating with the Scandinavian countries we hope to collect the necessary data in 5-6 years.

**Materials and methods:**

**Population:**

Total amount of 100 dogs over 2 years old, males and females (bitches that have given birth naturally and as well as delivery caesarean section and bitches that has not given birth).

**Radiographic examination:**

The pictures have to be taken in anoestrus and at least 60 days postpartum

Two x-ray pictures of the pelvis, dorsoventral and laterallateral projection (without anaestesia). In Denmark we will ask the veterinarians who take the x-ray of the back of the dashes to do the examinations. X-ray images can be transformed to DKC. They will be examined by Karen Singers who will do the measurements.

A blood sample for storage in the freezer for subsequent studies.

**External measurements:**

Weight on a digital scale

External measurements made on the dogs in a show position with the hint legs placed behind the level of the tail. Height of the withers from the ground to the dorsum of the processus spinosis of the first thoracic vertebra (with measuring rod). Body length measured from the most cranial point of the articuli humeroscapularis to the tuber isciadicum (with measuring tape)

**Reproductive history.**

The owners will receive an e-mail with questionnaire about reproduction history of the dog including question about date of birth, caesarean section rate in the family, litter size and weight of the new born puppies. In case the owners have problems with filling out the questionnaire, they may ask for help.
Statistical analysis

DKC has agreed to store the results until we have collected data from the necessary number of dogs. We will then ask for the data to be proceeded by an independent person at Life. All the results will be kept on a database and proceeded by an independent person at Life whether it is an employee or a master thesis student.

References:


Health Committee in the Scottish Terries Group Denmark

Else Vigholt

Overlæge dr med

MD, DSci.