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ORIGINAL RESEARCH

Pilot study of head conformation changes over time in the Cavalier King Charles spaniel breed

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Introduction

This project, initiated by breeders, investigated the concept that the head conformation of the Cavalier King Charles spaniel (CKCS) has changed and now presents a higher risk for syringomyelia (SM). The modern interpretation of head conformation favours a smaller, more exaggerated, brachycephalic type. Recent studies have identified brachycephaly and reduced caudal cranium as conformational features that increase the risk for SM.

Approach

A prospective study investigated the hypothesis that dysmorphic head features can be visually identified and correlated with SM risk. Thirteen CKCSs were selected from anonymised photographs by an international panel of breeders representing diverse opinions.

Following selection, the dogs' head shapes were assessed by Kennel Club judges in Sweden, UK and Slovenia using a checklist (Table 1). These subjective evaluations were compared to objective measurements of the cranium (cephalic index and rostrocaudal doming) and brain, skull and craniocervical junction magnetic resonance imaging morphometric measurements.

Results

There was a positive correlation (P=0.039) between the judges' checklist score and rostrocaudal doming (hind skull ratio) and between the cephalic index and caudal skull ratio (P=0.042). Five CKCSs had no SM and their status concurred with 62 per cent of the judges' evaluation. The judging panel had a 75 per cent success rate at matching head shape with SM status, (Swedish judges 86 per cent success, UK judges 20 per cent success).

Interpretation

The terms 'traditional versus modern type' and 'moderate versus exaggerated' used by the dog breeding community remain subjective and dependent on familiarity with local populations. Further investigation, using a more detailed checklist, might highlight additional features and provide breeders with more information about risky conformations.

Significance of findings

The study confirms the breed prevalence of SM. Previously, a reduced caudal skull was shown to be risky for SM and is purported to be recognised by some breed experts. Recognition of this feature and adoption as judging criteria might provide guidance in avoiding conformational extremes in breeding dogs. Pet buyers are greatly influenced by appearance and breeders respond to this market force. Thus, the role of breeders and pet owners in the selection of dogs is pivotal in ensuring dog welfare. Veterinarians also play a role in educating the public.

KEY FINDINGS

- This pilot study demonstrates that it is possible to make a visual assessment of Cavalier King Charles spaniel head conformation.
- Correlation with the risk of syringomyelia (SM) was inconclusive. However, the results suggest there was sufficient association between the judicators' assessment and the risk of SM to propose a larger study.

Table 1: Morphological features of traditional (moderate) and modern (exaggerated) head conformation

	Head conformation	
Level of characterisation	Traditional	Modern type
Primary	a narrower head	a wider head
	a flatter, lower and longer head	increased doming (ie, a shorter and higher head)
	a shallow stop, with less doming of the head towards the front compared to the back	a deep and pronounced stop, with an increasing amount of doming towards the front of the head compared to the back
Secondary	a defined occiput	a poorly defined occiput
	increased distance between nose and eyes	decreased distance between nose and eyes
	smaller eyes, better contained within the orbit	large, bulging eyes*

* the palpebral aperture has less orbital covering

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