

## CAVALIER KING CHARLES SPANIEL HEAD CONFORMATION STUDY INFORMATION SHEET FOR JUDGES

### Introduction

The team would like to invite you to take part in a research project. Before you decide you need to understand why the research is being done and what it will involve for you. Please take the time to read the following information carefully and ask questions about anything you do not understand. **However you are requested not to discuss this with colleagues to ensure you provide unbiased judgement.**

Syringomyelia (SM) is a painful condition, more common in toy breeds and crosses, including the Cavalier King Charles Spaniel (CKCS). In these toy breeds, SM is usually secondary to a specific malformation of the skull (called Chiari-like Malformation, CM for short).

There has been debate as to whether certain head shapes may increase risk for CM/SM. Identifying a head shape in dogs that is associated with these diseases would provide a guide for selection away from these conditions.

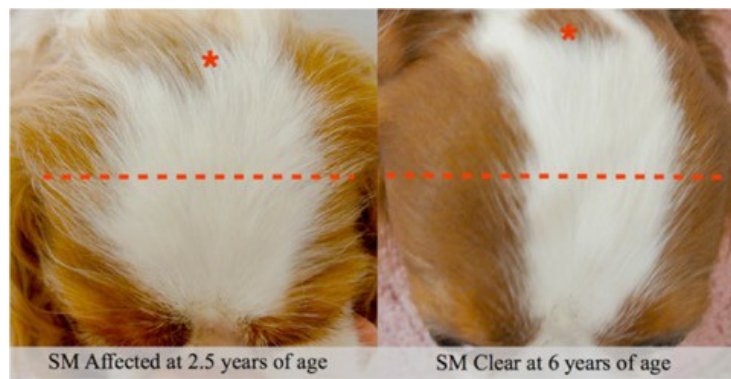
The current evidence describes two significant risk factors associated with CM/SM in the skull shape of the CKCS (Mitchell et al. 2014):

1. **cephalic index** (a measure of the broadness of the cranium (top of skull) relative to its length)
2. **distribution of doming of the cranium.**

**Cephalic index** is a measure of how broad the top of the skull is as compared to its length. This means that as the top of the skull becomes broader and its length shorter, the cephalic index increases. The measure in this context does not involve the length of the muzzle.

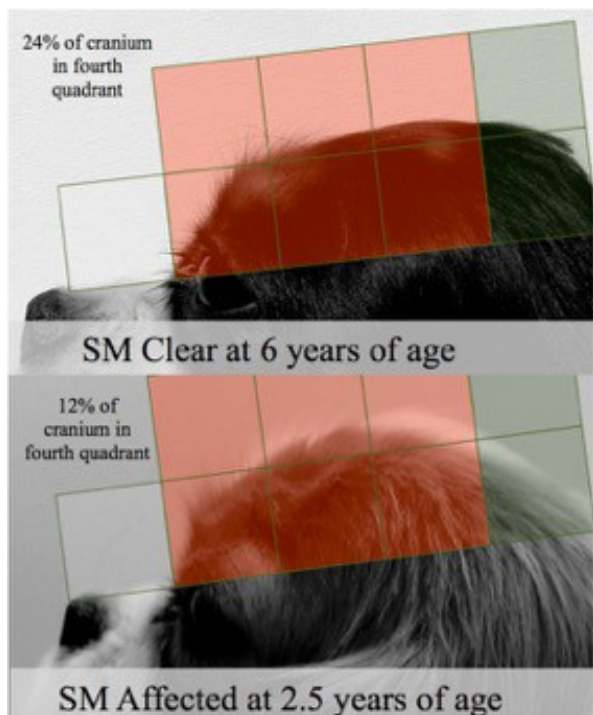
The current evidence suggests that dogs with skulls that narrower and longer skulls as compared to those with broader and shorter skulls are at reduced risk of developing SM.





Picture source (Mitchell et al. 2014)

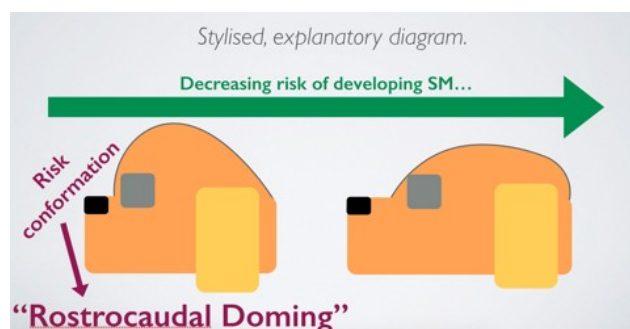
**Example of cephalic index differences in young affected and older clear individuals.** The CKCS on the left with early onset SM has a shorter and broader head. Red asterisk represents the point of the occipital protuberance and the line represents the breadth of the head at its widest points.



Picture source (Mitchell et al. 2014)

Further to this, the **distribution of the doming of the top skull** was found to be important. More cranium (top of the skull) at the back of the head relative to the amount at the front of the head protected against SM i.e. dogs were less likely to have the disease.

**Example of caudal cranium distribution differences in young affected and older clear individuals.** The cranium in the fourth quadrant in the SM clear individual shows an increased coverage of the grid relative to the first, second and third quadrants, resulting in a high percentage distribution in the fourth quadrant of 24%. Conversely, in the early SM affected individual, an increased coverage in the first, second and third quadrants and a decreased coverage in the fourth quadrant leads to a decreased percentage cranium distribution in the fourth quadrant of 12%.



For greater detail See YouTube video: <https://www.youtube.com/watch?v=5ivkBgMxFU0>

The previous study (Mitchell et al. 2014) showed that these two characteristics (cephalic index and doming) were linked. As the skull becomes broader and shorter, the doming is more to the front of the head as compared to the back.

**Therefore, the evidence suggests that dogs with broader and shorter skulls (more square when viewed from above) and with increased doming of the head towards the front are at increased risk**

of developing SM. Conversely, dogs with narrower and longer skulls (more rectangular when viewed from above) and with a more even distribution of doming across the head are at decreased risk of developing SM.

### **What is the purpose of the study?**

To find out if it is possible to identify risk of CM/SM in a dog's head shape through evaluation of the two risk factors already identified.

### **Why have I been invited to take part in the study?**

You have been invited to take part in this study because the Kennel Club have provided a list with your name as a Toy Breed Expert with experience of judging Cavalier King Charles Spaniels.

### **What will my involvement require?**

If you agree to take part, we will then ask you to sign a consent and confidentiality form. If you do decide to take part you will be given this information sheet to keep and a copy of your signed consent form. The research will last six months but your involvement would only be an about 10 minutes for each dog. 6 dogs have been selected from the UK.

### **What will I have to do?**

You will have to examine the dog/s and complete a checklist based on your observations. You are asked to measure **cephalic index** (a measure of the broadness of the cranium (top of skull) relative to its length). Callipers and a tape measure will be made available to you, together with a demonstration of their use if required.

### **Will my taking part in the study be kept confidential?**

Yes – You are required to sign a consent and confidentiality statement prior to the study commencement. Publication of names will only be made with written consent thereafter.

### **Full contact details of Principle investigator**

Dr Clare Rusbridge, School of Veterinary Medicine, Faculty of Health and Medical Sciences Vet School Main, Building, Daphne Jackson Road, University of Surrey, Guildford, GU2 7AL, Telephone (0)1483 689165.

### **Who is organising and funding the research?**

This research is organised by Ms Lena Gillstadt a cavalier breeder in Sweden and Dr Clare Rusbridge of University of Surrey in collaboration with Mrs P Knowler and Mr Thomas Mitchell above. The study is funded by the Swedish Kennel Club and the Cavalier Matters and Cavalier Health Charities. The funders aim to raise awareness to conformation risks that have been identified and outlined in the introduction above.

The sponsors of this study have agreed to pay for the BVA/KC Chiari-like Malformation and Syringomyelia Health Screening Scheme of your dog.

### **Who has reviewed the project?**

This research has been looked at by an independent group of people, called an Ethics Committee, to protect your interests. This study has been reviewed by and received a favourable ethical opinion from NASPA Research Ethics Committee, University of Surrey.

**Thank you for taking the time to read this Information Sheet**

### **Reference**

Mitchell, T. J., S. P. Knowler, H. van den Berg, J. Sykes, and C. Rusbridge. 2014. 'Syringomyelia: determining risk and protective factors in the conformation of the Cavalier King Charles Spaniel dog', *Canine Genet Epidemiol*, 1: 9.

# Cavalier King Charles Spaniel Head Conformation Study

In collaboration with the Swedish Kennel Club, University of Surrey and Rupert's Fund

Name of Judge \_\_\_\_\_

Date \_\_\_\_\_

Dog name/Identification \_\_\_\_\_

| Grade  | 1   | 2   | 3  |
|--|---|---|--|
| <b>Broadness &amp; shortness of the cranium</b> (top of the skull)                 | The cranium is not particularly broad nor short.                      | The cranium is broad and short.   | The cranium is very broad and short.   |
| <i>Tick appropriate box:</i>   |   |   |  |
| <b>Doming distribution</b>   | Doming is distributed evenly across the length of the cranium.        | Doming is distributed more towards the front but still maintains a moderate distribution. | There is a significant amount of doming at the front of the head, creating a round ball appearance towards the front.                                |
| <i>Tick appropriate box:</i>   |   |   |  |
| <b>Depth of stop</b>   | The stop is shallow.  | The stop is noticeable but not particularly deep.   | A deep and pronounced stop.  |
| <i>Tick appropriate box:</i>   |   |   |  |
| <b>The definition of the occiput (occipital crest; prominence on back of head)</b> | The occiput can be felt easily and/or is visible.                     | The occiput can be felt but not as easily and is less noticeable by looking.              | The occiput cannot be felt or requires a lot of palpation and feels deeper.  |
| <i>Tick appropriate box:</i>   |   |   |  |
| <b>Eye size and exposure</b>   | The eyes are set well within the head with no sclera (white) exposed. | The eyes are larger and prominent from the cranium. Sclera may be showing                 | The eyes are larger and exposed from the head. This is especially clear when viewed from the side. Sclera may be showing all the way around the eye. |
| <i>Tick appropriate box:</i>   |   |   |  |

I have examined this CKCS\* and in my opinion it's headshape overall is  
Please tick one choice. You may comment further on the back of the sheet.

moderate

exaggerated

**CI measurements** made AFTER examination and completion of checklist

Widest part of head \_\_\_\_\_ cm Distance between stop and occiput \_\_\_\_\_ cm

Signed \_\_\_\_\_

\* see Judge's notes

