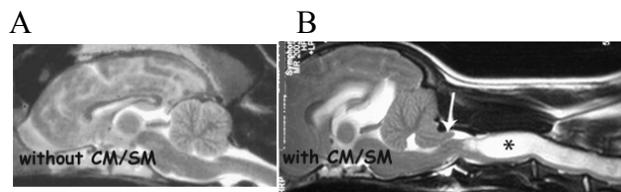


Proposed Chiari-like Malformation Syringomyelia (CMSM) Scheme

What is CMSM?

Chiari-like malformation (CM) is characterized by a mismatch in size between the brain (too big) and the skull (too small). This blocks up the opening from the skull into the spinal cord and alters the flow of cerebrospinal fluid (CSF). As a result fluid-filled cavities develop within the spinal cord called a syrinx, with the condition being called Syringomyelia ("*sear-ing-go-my-eelya*") (SM).



Example of magnetic resonance imaging features of canine CMSM. Panel A shows the brain and upper neck spinal cord from a normal dog. Panel B shows CMSM where the brain is pushed out the back of the skull (arrow) and there is a fluid-filled cavity (white with asterisk) within the spinal cord (grey).

What are the symptoms?

Although some dogs with a mild CMSM can seem completely normal, some dogs are painful and/or are unable or unwilling to exercise and may have increased sensitivity to touch especially around the head, neck, shoulders and sternum. Severe cases may display a characteristic shoulder, neck and/or head scratching and have neurological signs such as wobbliness and weakness. Some dogs may 'air scratch' without making contact with the body.

What breeds are affected?

CMSM has been shown to be inherited in the Cavalier King Charles Spaniel and the Griffon Bruxellois and is suspected to be inherited in the King Charles Spaniel. Other breeds reported with the condition include Maltese, Yorkshire Terriers, Chihuahuas, Papillons, Pomeranians, Affenpinschers, Havanese, Boston Terriers and Staffordshire Bull Terriers.

What is the CMSM scheme?

The aim of the BVA/KC CMSM scheme is to reduce or eliminate the incidence of inherited CM and SM in dogs. It will require a magnetic resonance imaging (MRI) examination of the brain and upper neck. Although it is expected that the majority of dogs using the CMSM scheme will be pedigree toy breeds, the scheme will be available for all dogs including crossbreeds.

The BVA produces the scheme's Procedure Notes, which set out the rules and regulations under which the Scheme operates and all the information needed to use the service.

Information on CMSM, current research, other resources as well as list of veterinary surgeons offering low cost CMSM scanning service can be found at www.veterinary-neurologist.co.uk and click on "Syringomyelia" and "SM screening" or visit www.thecavalierclub.co.uk and click on "Cavalier Health" or visit <http://www.griffonclub1897.co.uk/> and click on "Health Matters"

How will I arrange a MRI scan for my dog?

There are a number of veterinary centres which offer MRI scanning facilities and some provide a CMSM screening service at greatly reduced cost.

- **All dogs must be permanently identified (by microchip or tattoo)** before examination and certification. The identification will be verified prior to the examination and the identification number recorded on the certificate issued.
- **You must have the relevant KC owner registration document** with you in order to present your dog for a MRI scan. It is possible to examine dogs that are not KC registered; an alternative appropriate form of identification must be provided (e.g. identification from your veterinary practice or breed club).

What age must my dog be?

The **minimum** age of a dog for submission to the CMSM Scheme will be 1 calendar year. There will be no upper age limit.

SM is a progressive disease (dogs can get worse with age). Therefore it is recommended that breeders MRI scan their dog more than once, for example at 2-3 years and again later e.g. at 6 years of age.

Who reviews the MRI scans?

There is a list of BVA appointed neurologists and radiologists who will review the MRI scans. The MRI scans will be assessed by 2 scrutineers who will agree grading for the images.

How are the images graded?

Grading will be according to the severity of the CM and SM changes. The precise details of the grading system are currently being finalised.

What happens to the results?

The results of CMSM grading will be sent to the submitting veterinary surgeon who will forward the certificate to the owner.

In addition the names and results of KC registered dogs will be sent to the KC for publication and inclusion in the relevant documents. The Kennel Club will forward the relevant details to the Animal Health Trust (AHT) KC Genetics Centre for inclusion in the EBV computer model.

What is the EBV computer model?

Estimated Breeding Values (EBVs) are a statistical estimate of the genetic risk for a given disease for an individual dog, and a measure of the likelihood of the dog passing on the disease to its offspring. The initial EBV of an individual is half the EBV of its sire plus half the EBV of its dam. All dogs with relations who have undergone MRI screening for CMSM will have an EBV at birth, but it may be modified by the dog's subsequent clinical record or MRI scan and by information coming from other relatives.

What should I do if I want to breed from my dog?

Information will be provided by your Breed Club. If the dog is KC registered and of an appropriate breed then the EBV computer model (AHT/KC Genetics Centre) is designed to help select a suitable mate.

What if I want to breed and my dog is a breed that does not have an EBV computer model or is not UK KC registered?

If your dog is of a breed that has an EBV computer model and is closely related to UK KC registered dogs then it may have a CMSM EBV. However if this is not the case or it is another breed then the existing CMSM guidelines (Cappello and Rusbridge 2007) may be used and have been adapted to comply with the BVA/KC CMSM grading system. The aim of these breeding guidelines is to remove dogs with early onset SM from the breeding program.

Reference:

Report from the Chiari-Like Malformation and Syringomyelia Working Group round table. Cappello R, Rusbridge C; Chiari-Like Malformation and Syringomyelia Working Group. Vet Surg. 2007 Jul;36(5):509-12

Where can I get more information?

The Scheme's Procedure Notes (when available) and other free leaflets can be obtained from: British Veterinary Association, 7 Mansfield Street, London, W1G 9NQ Telephone 020 7908 6380

Or visit www.bva.co.uk/chs and click on the "Canine Health Schemes"

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