### SHETLAND SHEEPDOG (Sheltie)

<table>
<thead>
<tr>
<th>DISORDER</th>
<th>INHERITANCE</th>
<th>REFERENCE</th>
<th>BREEDING ADVICE</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Distichiasis</td>
<td>Not defined</td>
<td>1</td>
<td>Breeder option</td>
</tr>
<tr>
<td>B. 1. Corneal dystrophy 2. Sheltie –like corneal dystrophy</td>
<td>Not defined</td>
<td>1-3</td>
<td>Breeder option NO</td>
</tr>
<tr>
<td>C. Persistent pupillary membranes - iris to iris</td>
<td>Not defined</td>
<td>1, 4</td>
<td>Breeder option</td>
</tr>
<tr>
<td>- iris to cornea</td>
<td>Not defined</td>
<td>5</td>
<td>NO</td>
</tr>
<tr>
<td>- all other forms</td>
<td>Not defined</td>
<td>4</td>
<td>NO</td>
</tr>
<tr>
<td>D. Cataract</td>
<td>Not defined</td>
<td>1</td>
<td>NO</td>
</tr>
<tr>
<td>E. Choroidal hypoplasia (Collie Eye Anomaly) - Optic nerve coloboma - Retinal detachment - Retinal hemorrhage - Staphyloma/coloboma * a DNA test is available</td>
<td>Autosomal recessive</td>
<td>1, 6, 7</td>
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</tr>
<tr>
<td>F. Retinal atrophy - generalized</td>
<td>Not defined</td>
<td>1</td>
<td>NO</td>
</tr>
<tr>
<td>G. Slowly progressive retinopathy</td>
<td>Not defined</td>
<td>8</td>
<td>NO</td>
</tr>
<tr>
<td>H. Optic nerve coloboma</td>
<td>Not defined</td>
<td>1</td>
<td>NO</td>
</tr>
<tr>
<td>I. Uveodermatologic syndrome</td>
<td>Not defined</td>
<td>1</td>
<td>NO</td>
</tr>
</tbody>
</table>
OCULAR DISORDERS REPORT

Description and Comments

A. Distichiasis

Eyelashes abnormally located on the eyelid margin which may cause ocular irritation. Distichiasis may occur at any time in the life of a dog. It is difficult to make a strong recommendation with regard to breeding dogs with this entity. The hereditary basis has not been established although it seems probable due to the high incidence in some breeds. Reducing the incidence is a logical goal. When diagnosed, distichiasis should be recorded. Breeding discretion is advised.

Distichiasis in the Shetland Sheepdog usually involves stiff lashes which require permanent epilation.

B. 1. Corneal dystrophy

Corneal dystrophy: non-inflammatory corneal opacity (white to gray) present in one or more of the corneal layers (epithelium, stroma, endothelium). The term dystrophy implies an inherited condition. It is usually bilateral although not necessarily symmetrical and the onset in one eye may precede the other.

Corneal dystrophy - epithelial, stromal: breed-related, non-inflammatory, white to silver-colored opacification of the corneal epithelium and/or stroma frequently resulting from deposition of lipid

2. Sheltie-like corneal dystrophy

The corneal changes in the Shetland Sheepdog are characterized grossly by multifocal, central, subepithelial and superficial stromal, grey-white, circular or irregular rings. Some affected animals develop corneal erosions. The preocular tear film in the majority of dogs is unstable and requires symptomatic therapy to keep the patients comfortable. Further studies are necessary to define this disorder.

C. Persistent pupillary membranes (PPM)

Persistent blood vessel remnants in the anterior chamber of the eye which fail to regress normally by 3 months of age. These strands may bridge from iris to iris, iris to cornea, iris to lens, or form sheets of tissue in the anterior chamber. The last three forms are seen in the Shetland sheepdog and pose the greatest threat to vision and when severe, vision impairment or blindness may occur.

D. Cataract

A partial or complete opacity of the lens and/or its capsule. In cases where cataracts are complete and affect both eyes, blindness results. The prudent approach is to assume cataracts to be hereditary except in cases known to be associated with trauma, other causes of ocular inflammation, specific metabolic diseases, persistent pupillary membrane, persistent hyaloid or nutritional deficiencies. Cataracts may involve the lens completely.

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A spectrum of malformations present at birth and ranging from inadequate development of the choroid (choroidal hypoplasia) to defects of the choroid, retina, or optic nerve (coloboma/staphyloma) to complete retinal detachment (with or without hemorrhage). Mildly affected animals will have no detectable vision deficit.

This disorder is collectively referred to as "Collie Eye Anomaly". Although there is a lack of scientific evidence, it is believed that the incidence and severity of this entity in collies was decreased by breeding only "mildly affected" animals. At this time, the Genetics Committee of the ACVO recommends against breeding dogs with any form of the Collie Eye anomaly.

F. Retinal atrophy - generalized

A degenerative disease of the retinal visual cells which progresses to blindness. This abnormality, also known as progressive retinal atrophy or PRA, may be detected by electroretinogram (not part of a routine eye screening examination) before it is apparent clinically. PRA is inherited as an autosomal recessive trait in most breeds.

G. Slowly progressive retinopathy:

A syndrome as yet not well defined. May be a variant of PRA.

H. Optic nerve coloboma (without choroidal hypoplasia)

A congenital cavity in the optic nerve which, if large, may cause blindness or vision impairment.

I. Uveodermatologic syndrome

Uveodermatologic syndrome in the Sheltie bears many similarities to a condition in people called Vogt-Koyanagi-Harada (or VKH) syndrome. Thus, the condition in dogs is often referred to as VKH or VKH-like syndrome. It is an immune-mediated disease in which pigmented cells (melanocytes) in the eye and in the skin are destroyed by white blood cells (lymphocytes). The first clinical signs are usually inflammation of the intraocular structures (or uveitis) in both eyes. Adhesions between the iris and lens (posterior synechia) and the peripheral iris and cornea (peripheral anterior synechia) develop rapidly. Other complications include cataract development, retinal degeneration, retinal separation or detachment, optic disc atrophy and secondary glaucoma. The uveitis is very difficult to control medically and ultimately results in blindness in most affected dogs. Whitening of the hair (poliosis) and skin (vitiligo) may also be noted in advanced cases. The genetics of this
condition are unclear, but some genetic predisposition is indicated by the higher prevalence of this disorder in Shelties compared with other dog breeds. Affected dogs are generally young, ranging in age between 1 ½ to 4 years. Uveodermatologic syndrome

References

1. ACVO Genetics Committee, 1999 and/or Data from CERF All-Breeds Report, 1991-1998.
4. ACVO Genetics Committee, 2005 and/or Data from CERF All-Breeds Report 2003-2004.
5. ACVO Genetics Committee, 2009 and/or Data from CERF All-Breeds Report, 2008.