

Different Sized Pupils (Anisocoria) in Cats

 www.cat-world.com.au/different-sized-pupils-in-cats.html

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At a glance



About: The pupils are the black portion of the eyes which change size according to light conditions. When it is dark, the pupils are large (dilated), and when it is bright, the pupils are small (constricted). The pupils should be the same size in both eyes and odd sized pupils can indicate an underlying problem.



Causes: There are a number of causes which include glaucoma, uveitis, corneal ulcer, spastic pupil syndrome, certain medications, tumours, oculomotor nerve paralysis, Horner's syndrome, stroke, head trauma and iris atrophy.



Symptoms: Can vary depending on the underlying cause but can include pain in the affected eye, change of eye colour, change in eye size, loss of vision, head tilt, confusion.



Diagnosis: Thorough physical examination and detailed eye examination , tonometry to measure the pressure in the eye, ultrasound, fluorescein staining, electroretinography, Schirmer tear test and neurological evaluation.



Treatment: The goal of treatment is find and address the underlying cause as well as provide supportive care.

The pupils are the black opening located in the centre of the eye which expands and contract depending on the amount of light. In low light, they expand, to let more light into the eye, in bright light, they contract to let less in. Normally the pupils expand or contract together, with both either being dilated (large) or constricted (small).

Pupils of different sizes is medically known as anisocoria (*ann-eye-so-CORE-ee-uh*). The condition occurs for a number of reasons, and it may or may not be accompanied by other symptoms, depending on the underlying cause.

Causes:



Anisocoria may be neurological or ocular and causes can range from harmless to life-threatening. Common causes include:

- **Glaucoma** – Increase in fluid pressure in the eyeball.
- **Anterior uveitis** – Inflammation of the uvea, the pigmented layer of the eye.
- **Corneal ulcers** – Open sore on the cornea.
- **Spastic pupil syndrome** – Infection with the feline leukemia virus can cause this condition and it may alternate between both eyes.
- **Eye tumours.**
- **Oculomotor nerve paralysis** – The oculomotor nerve (cranial nerve III) is responsible for eye movement including constriction of the pupil, damage can occur due to systemic diseases such as diabetes or hypertension or due to head injury, tumours or aneurysms.
- Retinal disease –
- **Tumours** – Brain, eye or optic nerve tumours.
- **Horner's syndrome** – A condition causing drooping of the upper eyelid and constriction of the pupil caused by paralysis of the cervical sympathetic nerve supply.
- **Stroke** – A rupture or blockage of a blood vessel in the brain resulting in a loss of blood supply to an area of the brain.
- **Head trauma** – Can cause bleeding inside the brain which results in increased pressure in the skull.
- **Iris atrophy** – The iris is the coloured part of the eye and thinning of these cells can lead to a change in pupil size in the affected eye. This occurs most often in senior cats.
- **Certain medications** – Such as atropine which cause the pupil to dilate.

Symptoms:

Obviously, the major symptom is pupils which are uneven in size with one being larger than the other. Depending on the cause, other symptoms may be present, including:

- Pain in the eye.
- Change in the colour of the eye, redness or cloudiness.
- Change to the position of the eye in the socket.
- Abnormal eye movement.
- Drooping eyelid.
- Head tilting.
- Loss of vision.
- Confusion.

Diagnosis:

Your veterinarian will perform a physical examination of your cat and obtain a medical history from you including any medications or drops your cat is on if he has recently experienced a trauma (such as a fall, hit by a car etc.) and other symptoms you may have noticed.

Physical examination:

A complete physical checkup and detailed examination of the eyes to look for signs of trauma including ulcers and scratches, abnormal pupil shape (dyscoria), and evaluate for obvious signs of disease.

He will need to determine if the affected pupil is abnormally dilated (mydriasis) or abnormally constricted (miosis). The room will be darkened to see if the constricted (smaller) pupil dilates (increases), and shining a bright light into the eyes to see if the pupil(s) constrict, as they should do.

Secondly, he will need to determine if the cause is an eye disorder or neurological.

Diagnostic tests:

- Complete blood count, biochemical profile, and urinalysis to evaluate the overall health of your cat. These tests usually come back normal.
- Tonometry – This test measures the pressure in the eyes using a tonometer to check for glaucoma.
- Ultrasound – Eye ultrasound to look for tumours or lesions in the eyes.
- Fluorescein staining – This involves placing a few drops of fluorescein in the eye to look for corneal ulcers.
- MRI or CT- To check for tumours or lesions in the brain.
- Electroretinography (ERG) – To measure the electrical responses of the eye's rods and cones.
- Schirmer tear test – To measure tear production.
- Neurological examination.
- Blood test for feline leukemia.

If your veterinarian can't determine the cause, he will refer your cat to a veterinary ophthalmologist.

Treatment:

Treatment depends on the underlying cause and may include:

- Withdrawal of medications affecting the pupils.
- Antibiotics to treat bacterial infections.
- Surgery to treat tumours (if possible), and/or radiotherapy or chemotherapy.
- Medications or surgery to treat glaucoma.
- There is no cure for feline leukemia, however, supportive care can increase your cat's lifespan. This may include keeping your cat indoors, stress-free, changing his vaccine schedule, antibiotics to manage secondary infections, vitamins, antiviral drugs.
- Medications such as ACE inhibitors, beta-blockers and calcium channel blockers to control high blood pressure as well as a low sodium diet.
- Horner's syndrome usually resolves, however, your veterinarian may treat symptomatic symptoms with eye drops to dilate the pupil.

Prognosis:

The prognosis varies depending on the cause. Seek veterinary attention immediately if you notice your cat has different sized pupils.