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1. OPTHALMOLOGY: Examination of Eye

Introduction

Unlike various other body systems, most of the components of the eye can be directly observed and assessed without clinical pathology tests and procedures.

When presented with a patient that has an eye problem, it is important to follow a systematic approach to examine the eye and periocular structures. Most of the diagnostic procedures are non-invasive and a thorough knowledge of them can enable recognition and diagnosis of many ocular disorders.

Examination Steps to follow

- ✓ History and examination of a patient from a distance
- ✓ Cleaning eyes and trimming hair around eyes
- ✓ Menace response
- ✓ Pupillary light reflexes and dazzle response
- ✓ Stair test/jumping test if indicated
- ✓ Third eyelid examination
- ✓ Schirmer tear test
- ✓ Fluorescein dye test
- ✓ Measurement of intraocular pressure

Equipment Required for Eye Examination

- ➢ Examination room
- ➢ Equipment to clean off the debris – pair of scissors with blunt tips and round bodies; swabs for hot compress cleaning
- ➢ Light source … halogen rechargeable hand held device
- ➢ Magnifying lens
- ➢ Schirmer tear test strips
- ➢ Forceps – wide-mouthed
- ➢ Fluorescein dye strips
- ➢ Tonometer
- ➢ Direct/indirect ophthalmoscope (optional).

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1. History and examination of a patient from a distance

Ask specific questions:

- The duration of clinical signs
- Signs of pain such as spasm
- Unilateral or bilateral condition
- Rapidity with which condition occurred
- Any other systemic diseases present
- Current medications
- Any past injuries or accidents
- Presence or absence of any discharge and colour of discharge.

Observe the animal as it walks into the examination room. Determine if the animal is walking into the room freely or if it is colliding with objects on the way, exhibiting high stepping and/or if it is reluctant to move in an unknown environment.

Allow a few minutes for the animal to become familiar with the new environment while taking its history from the owner and gathering other valuable information like age, breed, sex etc. as most eye conditions are breed-specific. Evaluate the overall condition of the animal and any other obvious problems apart from the eye condition.

At this time, also evaluate whether the attitude of the animal is appropriate to conduct a detailed and safe examination.

2. Cleaning eyes and trimming hair around the eyes

In order to conduct a detailed ophthalmic examination it is important to ensure that the area around the eyes is clean and any long or matted hairs obstructing vision around the eyes are trimmed to enable easy examination. It is also important to ensure that the animal is properly restrained by an experienced nurse where needed. The owner may be able to hold the animal from behind with one hand around each elbow.

Determine if the problem is unilateral or both eyes are involved. Notice any difference in the size of eyes, any noticeable pain, and position of the eye, any visible drooping of eyelids, swelling or presence of ocular discharge. Clean any discharge around the eyes if present a hot compress is most useful for this.

3. Menace response

The assessment of vision is mainly done by checking the menace response. It is a cortical response that requires a functional facial nerve as well as peripheral and central visual pathways to produce a reaction to a hand gesture.

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The menace response is elicited by making a threatening hand motion toward one eye while the other eye is covered. It is very important to avoid any contact with facial hair while conducting a menace response test. This test should elicit a blink response in a normal eye, which is indicative of good vision and a functional facial nerve. Each eye should be evaluated separately.

4. PLR and dazzle response

The pupillary light reflex (PLR) is elicited by shining a bright light through the pupil and observing an immediate pupillary constriction in that eye. This is performed in both eyes and a symmetrical response should be assessed.

This examination is helpful in assessing the relative size of pupils. The *direct* and *consensual* pupillary light reflexes are tested. The direct PLR is elicited by shining a bright white light through the pupil and observing a prompt pupillary constriction in that eye. The consensual PLR is elicited by observing the contralateral pupil constriction while the bright light is directed through the ipsilateral pupil. The rapidity of pupillary light response, extent of miosis and ability to maintain miosis to constant light stimulation are evaluated.

A normal PLR requires at least some normal retina, normal optic nerve function, midbrain connections with nuclei of Cranial nerve Occulomotor, intact Cranial nerve efferents and normal pupillary sphincter muscle function.

The dazzle response is the normal response to a bright light directed into the eye and involves retraction of the globe and closure of the eyelids. The closure may be subtle. A positive dazzle response demonstrates that retino-optic nerve connections, sub-cortical centres, facial nerve as well as the orbicularis oculi muscle are working optimally.

5. Stair test/jumping test if indicated

Assessment of vision is also performed by forcing the animal to go up and down stairs. Descending stairs requires good stereoscopic vision. Reluctance or inability to descend stairs is an important clinical finding with regard to an animal's spatial vision. Vision in cats can be well assessed by a willingness to jump from an elevated position e.g. a chair to the floor. A blind cat will be very reluctant to take the leap.

6.Third eyelid examination

The third eyelid plays very important role. It spreads the tear film over the corneal surface and protects the cornea. The lymphoid tissue displays immunologic activity and secretion of accessory lacrimal gland contributes towards the pre-corneal tear film.

The examination of third eyelid is only possible after instillation of a topical anaesthetic agent. With the help of a blunt tipped forceps, examine the palpebral and bulbar surface of the third eyelid. Common abnormalities include presence of any foreign bodies,

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eversion of the cartilage of the third eyelid and enlargement of bulbar lymphoid tissue and the secretory gland.

7.Schirmer tear test

This test is performed to evaluate the tear production when deficiency of the lacrimal system is suspected. The tear film maintains normal corneal health and the normal tear production in dogs is greater than 10 mm wetting/minute.

This test is carried out with the use of test strips impregnated with dye. The dye moves up the strip depending upon the degree of wetting. The round end of these test strips is bent slightly and placed in the ventral conjunctival fornix and held in place for one minute. Then the strip is removed and wetting is assessed by measuring the millimetre scale on the strip. This test is imperative for animals where a condition like kerato-conjunctivitis sicca (KCS) is suspected.

8.Fluorescein dye test:

The fluorescein dye test is conducted to demonstrate the presence or absence of corneal ulcers or loss of epithelium. Fluorescein dye or stain is applied topically as an impregnated paper strip on the conjunctiva and cornea. Superficial ulcers may be stained with dye and can be visualised clearly with a white light or a woods lamp. Once the examination is complete, irrigate all the residual fluorescein with saline.

9. Measurement of intraocular pressure

Intraocular pressure (IOP) measurement is an important diagnostic test and can be done in several ways. The IOP evaluation requires topical anaesthetic and must be recorded before excessive manipulation or before the patient becomes restless and excited.

IOP is assessed digitally and measured by Schiotz tonometry or applanation tonometry. The applanation tonometers are very accurate and easy to use. The availability of Tono-Pens has made the diagnosis and subsequent treatment of glaucoma much easier in veterinary practice. The Tono-Pens are placed on the central cornea of the dog and tip is gently and repeatedly touched to the cornea and an average reading is established. The proper positioning of a Schiotz tonometer is very important, requiring a proper head restraint.

Further Reading

Gelatt, Kirk N (ed) (2000) Essentials of Veterinary Ophthalmology, Lippincott Williams & Wilkins, Philadelphia; 595 pp. (ISBN 0-683-30077-6)

Peiffer, Robert L and Petersen-Jones, Simon M (eds) (1997) Small Animal Ophthalmology: A Problem-oriented Approach, 2nd edition, WB Saunders, London; 238 pp. (ISBN 0-7020-2017 6)

Slatter, Douglas (1990) Fundamentals of Veterinary Ophthalmology, 2nd edition, WB Saunders, Philadelphia; 628 pp. (ISBN 0-7216-2463-4)