

OPHTHALMOSCOPY IN VETERINARY PRACTICE

C. RAMANI

Assistant Professor

Department of Veterinary Surgery and Radiology
Madras Veterinary College, Chennai.

Ophthalmology has been recognized as a fascinating, multifaceted specialty in veterinary medicine and Surgery, which further emphasize the need for a continuous improvement of sophistication of general practitioner and so also his competency.

Appropriate management implies two inseparable principles – accurate diagnosis and adequate therapy. Diagnosis of ophthalmological conditions have an edge over diagnosis of pathology involving other systems, since the abnormalities can be directly visualized to make a diagnosis. Most of the diagnostic equipment used in examination of eye depends on the principle of refraction, and hence, transparency of the cornea is very vital, while using such equipments.

DIRECT OPHTHALMOSCOPY

Direct Ophthalmoscopy in veterinary practice was first used by Professor Reynat in 1858.

Direct Ophthalmoscopy - (termed because the fundus is viewed directly) Used to examine both the anterior and posterior segments of the eye, but primarily the fundus. The ophthalmoscope consists of a light source, mirror or prism and view hole through which a circular series of convex and concave lenses (numbered in diopters) can be used to examine different parts of the eye. The device also contains a circular dial to change the illumination to one of the following settings:

1. **green filter** - helps differentiate hemorrhage from black pigmentation (hemorrhage appears red).
2. **graticule** - grid to assist in estimation of lesion size, using the optic disc diameter as a reference (dog and cat, 1-2 mm diameter; cattle 3-4 mm diameter; horse 5-7 mm horizontal, 3.5-5 mm vertical).

3. slit - slit of white light assists the detection of an elevation or depression of tissue

4. different sizes of light apertures - fit size of circle of light to pupil size Most devices contain a rheostat to control the amount of light delivered.

Image and Magnification - The image produced is real and upright. Direct ophthalmoscopes use the refractive ability of both the patient's and the examiner's eyes to magnify the image. Therefore the refractive error of the patient and of the examiner affects the amount of dialed diopters needed to focus on the retina. In an emmetropic eye, the image is magnified 15x and a 5 mm diameter circular area of the fundus is visualized. hyperopic eye— more seen but less magnified myopic eye— less seen but more magnified .

At the posterior pole of the eye, axial magnification varies according to the species:

One diopter = 0.2 mm in the cat, 0.3mm in the dog, 0.7 mm in the ox, and about 1.3 mm in the horse. Example: in evaluating the depth of a cupped optic disc in a dog, the bottom of the depression is in focus at (-)5 diopters and the retina is in focus at (-)2 diopters, the disc is cupped The change in diopters between focusing on the retina and on the lesion also helps determine if the lesion is elevated or depressed. Example: if a retina is in focus at (-)2 diopters and the lesion is in focus at (-)5 diopters (more negative) it is depressed, whereas if the lesion is in focus at 0 diopters (more positive) it is elevated. Other advantages: easy to use, can keep one hand free during examination, and relatively inexpensive.

Advantages - Direct Ophthalmoscopy can be used for close evaluation of fundic lesions, both because of the high magnification afforded and because

the device can be used to estimate the degree of depth or elevation of a lesion.

Disadvantages

- In viewing the fundus, only small areas can be seen at any one time.
- * To view the eye, must bring instrument and your face very close (2 - 3 cm) to patient's eye. Intemperamental animals, this may pose problems.
- * It is harder to visualize the fundus through cloudy ocular media.
- * It is more difficult to examine the peripheral fundus.
- * Stereopsis is absent.

There are several models of direct ophthalmoscopes available to the veterinarian. The Welch- Allyn, Propper, and Keeler are most popular.

INDIRECT OPHTHALMOSCOPY - (fundus is viewed indirectly). A convex lens is placed between the patient's and the examiner's eyes, and a real, inverted image (upside-down and backward) is formed in space, between the lens and the examiner's eye.

Magnification - The magnification depends on the focal length of the lens.

20 D lens: 4-5x magnification but less field of view
30 D lens: 2-3x magnification but greater field of view.
An important point to consider is that the axial magnification of the image varies with the species examined. For this reason, a very mild elevation of the optic disc seen ophthalmoscopically in a horse should be given much more significance than a disc of similar appearance in a dog. In addition, the fundic image in the horse will appear flattened.

ADVANTAGES

- * panoramic view of the fundus
 - * lens is held 4-6 cm away from patient's eye, and patient is 0.5 -0.75 meters away from examiner (less risk of being bitten/scratched)
 - * easier to view fundus through opacities in ocular media
 - * stereoscopic view, if using a binocular head unit.
- Disadvantages
- * binocular and monocular units expensive
 - * less fundic detail than with direct ophthalmoscopy
 - * device only used to view fundus and posterior vitreous
 - * less magnification, image upside-down and backward.

The clinician must recognize the normal fundus in all of its variant forms, in order to recognize an abnormal fundic appearance. There are many variations of normal in dogs and cats.

NOTE TO AUTHORS

1. Articles should be type written, double spaced on one side of paper and a digital copy in CD form in plain text format.
2. Advance copy can be sent by e-mail to drshibusimon@yahoo.co.in
3. Article shall be considered for publication on condition that they are contributed solely to Jiva.
4. Contributors shall note that all articles may not be published and the decision of the editorial board shall be final in this regard.

The next issue of Jiva will be a general issue with a multifaced approach and articles in the following topics are solicited:-

Research articles with field orientation, clinical articles, field experiences, a glimpse into the humourous side of life of a Vet., innovative approaches in veterinary practice, horse sense, quiz time, and so on.

We appeal to interested veterinarians and scientists to contribute articles on or before 25th November 2005.