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Two Dimensional Sonography Biometry Evaluation of Rabbits Eye

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Abstract: The knowledge of the normal appearance and ocular dimensions of rabbit eyes facilitates the use of ultrasonography in the evaluation of ocular disease. The objective of the present study was to determine ultrasonographic and echobiometric findings in the eyes of adult rabbits. B- mode ultrasonography was performed in 10 healthy adult rabbits (20 eyes). The ocular structures measured (mm), 050±0.12, (cornea); 6.28±0.23, (lens thickness); 9.23±0.61, (vitreous chamber depth); and 18.28±0.17, (axial globe length). The ultrasonographic appearances of rabbit's eyes were very similar to those of other domestic and wild species.

Keys words: Rabbit · Eye · Sonography · Biometry

INTRODUCTION

Ultrasonography is an important adjuvant for the clinical assessment of various ocular and orbital diseases [1]. With understanding of the indications for ultrasonography and proper examination technique, one can gather a vast amount of information not possible with clinical examination alone.

Ultrasonography is a safe noninvasive way to evaluate the intraocular and retrobulbar tissue of opaque eyes [1, 2]. A-mode, two-dimensional and Doppler ultrasonography have been used to characterize the ocular biometry, ocular structures and orbital and ocular vasculature respectively, in humans and dogs [3, 4]. In rabbits the biometry of normal eyes have been reported by A-mode. However, in the author's knowledge the ocular examination by two-dimensional and Doppler imaging ultrasonography has been poorly documented [5]. The purpose of this study was to describe the normal ultrasonographic appearance of rabbit's eyes using two-dimensional ultrasound, perform biometric evaluation of rabbit eyes.

MATERIALS AND METHODS

This study was performed in 10 adult New Zealand White rabbits weighing between 1.5 and 2.5 kg in veterinary imaging service, Batna University. All animals were considered normal on the basis of complete physical and ophthalmic examinations, were scanned ultrasonographically using a Mylab 20 esoate ultrasound machine with a convex array transducer of 5-13 MHz. All rabbits were sedated with acepromazin , 0.5mg/Kg and Tetracain HCl 0.05% drop was used for relatively prevention of the eye movement.

The ultrasonographic procedure and the interpretation of the images were achieved according literature data. By two-dimensional (2D) ultrasonography the following ocular structures were measured: cornea, anterior chamber, lens thickness, vitreous body and axis dimension of the globe (Fig 1 and 2).

RESULTS

On two-dimensional ultrasonography method was found to be a valuable technique for animal ophthalmic evaluations. The rabbit's eyes images appeared as well-defined ovoid structures and identified ocular structures showed similar appearance to those reported in dogs . By using different probe angle, it was easily possible to detect different scans of complete lens, cornea, and iris and cilliary body and optic disc. (Table 1).

DISCUSSION

Ocular ultrasound is an addition to, not a replacement for, routine ophthalmic examination including assessment of menace, blink and papillary light response, fluorescein staining, nasolacrimal evaluation, determination of intraocular pressure, and examination of anterior and posterior segments using a bright focal light source and direct and indirect ophthalmoscopy or biomicroscopy, respectively [6-8].

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Fig. 1: Normal sonographic appearance of the rabbit globe, This image was obtained with a 7.5-MHz curvilinear transducer set at10.0 MHz with a scanning depth of 3 cm. (LC) lens capsule. (V) vitreous. (ON) optic nerve. (BO) bony orbit. (EM) extraocular muscles.

Fig. 2: Measurements of different axis of rabbit eye. LA (Long axis), LCa (Lens capsule axis), Va (Vitreous axis)

Table 1: Biometric evaluation of rabbits eys

Case	Anterior chamber (mm)	Cornea (mm)	Lens axis (mm)	Vitreous axis (mm)	Ocular axis (mm)
Rabbit1	3.1	0.45	6.1	9.1	18.1
Rabbit2	2.7	0.41	6.0	9.3	18.2
Rabbit3	3.2	0.48	6.5	9.0	18.0
Rabbit4	3.3	0.75	6.3	9.4	18.4
Rabbit5	3.1	0.44	6.3	9.2	18.3
Rabbit6	3.3	0.46	6.6	9.5	18.3
Rabbit7	3.3	0.45	6.5	9.5	18.5
Rabbit8	2.9	0.48	6.2	9.1	18.1
Rabbit9	3.2	0.74	6.0	9.2	18.4
Rabbit10	3.4	0.41	6.3	9.3	18.5
Mean± SD	0..50±0.12	3.36±0.21	6.28±0.23	9.26±0.17	18.28±0.17

The results of this research showed that dimensions of anterior chamber, lens, vitreous chamber and axial globe length of adult rabbits give good references for veterinary ophthalmologist [4, 9]. Ultrasonographically, intraocular chambers and structures resemble those observed for other animal species. The knowledge of normal ocular dimensions facilitates the use of ultrasonography in the evaluation of ocular disease in adult rabbits.

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