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**TONOMETRY OF NORMAL AND ANAESTHETIZED
SHEEP WITH XYLAZINE***
(With One Table & One Fig.)

By

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قياس ضغط العين للأغنام الطبيعية والمخدرة بالزيلازين

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تم قياس ضغط العين لعدد ١٦ من الأغنام السليمة اكلينيكيًا وخالية من أى مرض من أمراض العين باستخدام جهاز شوتز بعد التخدير السطحي للقرنية ووجد أن ضغط العين اليمنى يتراوح بين (٣٠ الى ٣٤) ملم زئبق والعين اليسرى يتراوح بين (٢٢ الى ٢٤) ملم زئبق كما وجد أن الحيوانات المخدرة باستخدام الزيلازين بجرعة ١ مجم لكل كجم من وزن الجسم أدى الى هبوط مرشح لضغط العين لمدة ٣٥ دقيقة بدون أى علامات تسم اكلينيكية.

SUMMARY

Intraocular pressure of sixteen clinically healthy sheep free from ocular diseases were measured by Schiøtz tonometer, using only topical corneal anaesthesia. The intraocular pressure ranged from 30.1 to 43.4 mm Hg in the right eye and from 32.4 to 43.4 mm Hg in the left eye. Xylazine in a dose of 1 mg/kg b.wt. produced a uniform ocular hypotony for about 35 minutes without any clinical toxication.

INTRODUCTION

Intraocular pressure has a significant diagnostic value in many ocular conditions in human and veterinary ophthalmology. Although tonometry is routinely used in human ophthalmology, yet its use has been recently advocated in veterinary medicine, it is still not widely utilized (MAGRANE, 1951). Schiøtz tonometer is primarily used in veterinary ophthalmology for cats and dogs by MAGRANE (1951); BRYAN (1965) and PEIFFER, *et al.* (1977). The most widely accepted method of equine tonometry using Mackay Marg tonometer is described by COHEN and REINKE (1970); McCLURE, *et al.* (1976) and TRIM, *et al.* (1985).

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Available veterinary literatures are devoid of any mention of the normal tonometry in sheep, therefore it is aimed to record the normal intraocular pressure in sheep and evaluate the effect of xylazine hydrochloride 2% as an anaesthetic drug on intraocular pressure.

MATERIAL and METHODS

The study was carried out on sixteen clinically healthy native breed sheep of both sexes free from ocular disease. Their age ranged from 2-4 years and they were between 30-60 kg b.wt.

Each animal was placed in lateral recumbency in a quite manner. Two or three drops of a local anaesthetic (1% Novesine*) were applied in each eye. The head of the animal was elevated so that the corneal surface was horizontal. The eyelids were carefully retracted without any pressure on the globe. The Schiøtz tonometer was placed on the center of the cornea in a vertical axis. Three tonometer readings were taken with 5.5 gm weight. These readings were transformed into mm Hg using canine calibration table and averaged.

The animals were withheld from food and water for 12 hours before induction of general anaesthesia. Xylazine hydrochloride 2% solution was injected intramuscularly in a dose of 1 mg/kg b.wt. Intraocular pressure of each eye was measured at intervals of 5, 20, 35, 50 and 65 minutes post-injection. Distilled water was applied to the eye for moistening the cornea before the use of Schiøtz tonometer.

RESULTS

Tonometry in the normal sheep eye receiving only topical anaesthetic ranged from 30.1 to 43.4 mm Hg in the right eye and from 32.4 to 43.4 mm Hg in the left eye. The range of both eyes was 31.2 to 43.4 mm Hg with an average of 36.7 mm Hg (table 1).

Tonometry record extensive decrease in the intraocular pressure in sheep after induction of anaesthesia with xylazine. The lowering of the intraocular pressure began after 5 minutes and continued in a uniform manner for 35 minutes post-injection. The maximum decrease in the mean values for intraocular pressure was recorded at 35 minutes post-injection. It was reduced from 36.3 to 27.0 mm Hg in right eye and from 36.0 to 26.7 mm Hg in left eye. The average decrease in intraocular pressure in both eyes was from 36.1 to 26.6 mm Hg (table 1 and fig. 1).

* Wander Ltd., Berne Switzerland.

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DISCUSSION

Schiotz tonometer can be used to measure the intraocular pressure in sheep. The accuracy of the Schiotz tonometer in measuring intraocular pressure has been evaluated in several species by MAGRANE (1951); LEADER, *et al.* (1969) and COHEN and REINKE (1970). The use of Schiotz tonometer is more advised in small animals than in large animals (SLATTER, 1981). The results of the present study indicated that the application of canine calibration table for the Schiotz tonometer to the normal sheep eye gave reliable results.

The use of xylazine hydrochloride as a satisfactory sedative and analgesic in sheep has been described by SAGNER, *et al.* (1968); STRAUB (1971) and SHOKRY, *et al.* (1976). Administration of higher doses results in a good anaesthetic state without any symptoms of toxication as has been reported by KOSUCH, *et al.* (1973) and ALI, *et al.* (1988).

Intraocular pressure is decreased after xylazine injection in a uniform state for 35 minutes then gradually increased. This result is in agreement with that recorded in horses by McCLURE, *et al.* (1976) and TRIM, *et al.* (1985).

The lowering of the intraocular pressure may be attributed to the depressing action of xylazine on the central nervous system and fall of the blood pressure (SAGNER, *et al.* 1968; STRAUB, 1973; MOHAMED, *et al.* 1976 and HSU, *et al.* 1987).

It is emphasized that xylazine can be considered of practical advantage in ophthalmology including tonometry and surgical interference of the sheep eye.

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Table (1): Intraocular pressure of normal and anaesthetized sheep with xylazine.

AN.NO.	NORMAL IOP (mm Hg)		XYLZINE HYDROCHLORIDE									
	(0)		(5 min.)		(20 min.)		(35 min.)		(50 min.)		(65 min.)	
	R.	L.	R.	L.	R.	L.	R.	L.	R.	L.	R.	L.
1	32.6	32.6	34.0	34.1	34.1	31.8	22.0	26.3	30.3	27.0	33.9	33.9
2	30.1	32.4	32.6	32.6	25.1	27.9	34.1	27.9	34.1	35.4	29.0	31.4
3	31.4	35.6	26.0	25.1	26.0	22.1	26.0	22.1	24.0	22.7	29.0	32.6
4	35.4	34.1	34.4	27.9	23.4	27.1	25.1	26.0	29.0	27.0	35.4	31.4
5	36.8	33.9	32.6	33.9	29.0	26.0	26.0	26.0	30.3	32.6	36.8	33.9
6	35.4	33.9	32.6	35.4	27.9	30.1	25.1	27.9	31.4	32.6	33.9	36.8
7	36.8	36.8	29.0	30.1	29.0	30.1	22.7	24.3	22.7	20.7	32.6	36.8
8	33.9	36.8	29.0	32.6	29.0	30.1	26.0	27.9	29.0	29.0	34.1	32.6
9	36.9	38.3	29.0	32.6	27.0	23.4	24.5	23.4	27.9	27.0	35.4	33.9
10	40.0	40.0	31.4	30.3	32.7	30.1	27.1	30.3	30.1	32.6	36.8	33.9
11	38.3	36.8	25.1	23.4	26.0	28.2	24.3	21.9	31.4	30.1	36.8	33.9
12	43.4	43.4	36.8	33.9	27.1	27.1	26.0	24.3	33.9	27.1	35.4	35.4
13	38.3	36.8	32.6	32.6	30.1	30.1	36.8	35.4	38.3	36.3	38.3	36.3
14	38.3	38.3	33.9	33.9	26.9	24.3	25.1	25.1	33.9	35.4	33.9	35.4
15	36.8	33.9	29.0	30.1	24.2	25.1	33.9	31.4	38.3	38.3	38.3	38.3
16	37.1	33.9	35.4	33.9	22.7	30.3	27.5	27.5	38.3	38.3	40.0	40.0
x	36.3	36.0	31.3	31.4	27.5	27.7	27.0	26.7	31.4	30.7	34.9	34.7
x (R&L)	36.1		31.1		27.6		26.6		31.0		34.8	

AN.NO. = Animal number.

x = Mean value.

R. = right eye.

x (R&L) = Mean value of both eyes.

L. = left eye.

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