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HYPHEMA IN DOMESTIC ANIMALS (With One Table & 6 Figs.)

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(Received at 13/11/1989)

التجمع الدموي بالفرقة الأمامية للعين في الحيوانات الأليفة

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تم فحص عدد ٧٢ حالة اكلينيكيًا تعاني من تجمع دموي بالفرقة الأمامية للعين ، وقد اتضح أن معظم هذه الحالات كانت نتيجة صدمات بالعين (٦١) . وقد تم تقسيم هذه الحالات حسب عدة عوامل منها : السببات ، شكل التجمع الدموي بالعين ، الحجم ، المدة الزمنية التي مرت عليه ، وحالة الدم بالفرقة الأمامية بالعين (سائل / متجلط أو مختلط) . وقد وجد أن الحالات التي تحتوي على تجمع دموي يشمل نصف الفرقة الأمامية أو أقل تتماثل للشفاء دون أي مضاعفات وقد وجد أيضا أن العلاج بالعقاقير خلال الأربعة أيام الأول من الإصابة يعطي نتائج أفضل من التدخل الجراحي خلال هذه الفترة حتى ولو كان التجمع الدموي يملأ الفرقة الأمامية كاملة ومصحوبا بزيادة في ضغط العين.

SUMMARY

Intraocular hemorrhage (hyphema), that occupying one half or less of the volume of the anterior chamber have a good prognosis and usually resolves without sequelae within 2-3 days. Traumatic hyphema that involve three quarters to the entire anterior chamber can obscure additional damage.

Medical management seems to be the best therapy during the initial four-day period, even if total hyphema with moderately increased intraocular pressure is present, surgical intervention at this period produced no better results than did the medical therapy, were allowed to resolve spontaneously after four days.

INTRODUCTION

Hemorrhage in the anterior chamber of the eyeball is termed hyphema. GELATT (1981) stated that the causes of hyphema in dogs include trauma, systemic clotting disorders, iridocyclitis, congenital anomalous globes, glaucoma, penetrating foreign bodies and paracentesis. RAKUSIN (1972) reported that small hyphemas cleared readily, but if the hyphema filled more than one-half of the chamber the prognosis was

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poor and the percentage of complication was high. YASUNA (1974) felt that the immediate use of steroids reduced the incidence of secondary hemorrhage, presumably by reducing hyperemia. While GELATT (1981) advise to admenster mydriatics in addition to corticosteroids to effect for iridocyclitis, BEDROSSIAN (1974) felt that cycloplegics shortened the clearing time of hyphemas. HAVENER (1970) stated that miotics hasten the absorption of blood through the iris surface by making more iris surface available. READ and GOLDBERG (1974) did not feel that posterior synechiae were prevented by cycloplegics, but it would appear to be advisable to use them if severe iritis is present. If the intraocular pressure becomes elevated with hyphema, the anterior chamber is irrigated with balanced salt solution and 1000-1250 units/ml of fibrinolysin to break down the blood clot and facilitate their removal through gentle irrigation using the two-needle irrigation methods (SCHEIE; ASHLEY and BURNS (1963) and OOSTERHUIS, (1968).

The aim of the present study is directed for the correction of hyphemas in domestic animals whether by medical management or surgical interferences or both together.

MATERIAL and METHODS

Hyphema was diagnosed and recorded in 72 animals (14 donkeys, 8 cattle, 7 buffaloes, 13 sheep, 5 goat, 16 camels, 5 dogs and 4 cats). These clinical cases were selected from different animal species suffering from different ocular affections and were collected from the clinic of the Faculty of Vet. Med., Zagazig Univ., Benha Branch, from Governmental farms surrounding it and from Brooke Hospital Society for Animals in Cairo. A useful classification of hyphemas with their number in different domestic animals are tabulated in table 1.

It is most important that the ocular examination be thorough. External examination was performed for detection of ecchymosis, lid laceration, proptosis, edema, enophthalmos, fractures of the supraorbital process.

For accurate clinical examination of the eyeball, for application of ocular therapy and for minor surgical intervention, tranquilisation of the animals was achieved. Rompun was used in buffaloes at a dose rate of 0.08 mg/kg b.w., in cattle & camels at a dose rate of 0.05 mg/kg b.w. and in sheep & goats at a dose rate of 0.2 mg/kg b.w. Combelen was used in donkeys at a dose rate of 0.15 mg/kg b.w.

After clinical examination, the animals were subjected for medical treatment and/or surgical intervention including anterior chamber paracentesis.

Medical management:

Oral aspirin was used as an analgesic in the management of pain in traumatic hyphema.

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Immediate subconjunctival injection of one ml 1/10,000 epinephrine, as an effective vasoconstrictor, is useful in controlling bleeding.

The use of steroids (Dexa-scheroson ampoule, one ml sub. conjunctivally once daily for 3 successive days) reduces the incidence of secondary hemorrhage, where it reduces hyperemia.

Atropine sulphate eye drops 1% 3 times daily to guard against adhesions of the iris (anterior and posterior synechiae) specially in secondary hyphema resulting from iridocyclitis (Fig. 5). Atropine - induced mydriasis breaks the adhesions and decrease the possibility of serious complications due to synechiae.

Subconjunctival injection of 2 ml Garamycin (Gentamycin sulphate 40 mg/ml) once daily for 3 successive days.

Anterior chamber paracentesis

In addition to tranquilisation of the animals the eyeball must be anesthetised using a retrobulbar anesthesia with 3% procaine H.cl. solution. Donkeys must be under the effect of deep narcosis using chloral hydrate 5 g/50 kg B.w. 10% solution. Dogs must be under the effect of general anesthesia using I.V. injection of 5% thiopental sodium.

The eyelids are retracted by speculum and the conjunctival sac was thoroughly washed using boric acid solution 2%. The globe is stabilized by thumb forceps grasping the bulbar conjunctiva.

A useful device to aspirate the aqueous humour containing hyphema, consists of two 1 ml syringes and a 22-gauge needle. The anterior chamber is entered directly through the limbus or cornea near to the limbus or subconjunctivally just back to the limbus. Keeping the tip to the needle away from corneal endothelium and the lens capsule in a plane parallel to the iris (Fig. 2). The anterior chamber is gently irrigated with sterile saline solution until the flow become free of blood (Fig. 3).

If there was a remnant clot was still appeared in the anterior chamber, a 2 mm limbal or preferably corneal incision was performed with the tip of a Bard-Parker No-11 blade. The incision was slanted within the cornea, so that it is selfsealing. The anterior chamber is slowly and gently irrigated with a balanced salt solution and 1000-1250 units/ml of fibrinolysin to break down the blood clot and facillitate their removal. After several minutes the anterior chamber was flushed with sterile saline solution. The fibrinolysine washout procedure was repeated five times, each times the clot becomes smaller.

If the clot was firmly situated into the recesses of the angle, a large incision must be performed. A blunt 22-gauge needle or blunt iris hook is introduced, and the clot carefully removed from the anterior chamber.

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The corneal incision is usually self-sealing and requires no sutures, unless it is larger in length.

Subconjunctival and systemic injections of antibiotic-corticosteroid therapy to guard against secondary endophthalmitis. Patching of the eye or application of 3rd eyelid flap as a physiological bandage.

RESULTS

Most cases of hyphemas recorded in the present work were of traumatic origin (61 from 72 clinical cases). A large number of which were suffered from other lesions to the eyeball and its adnexa (Table 1).

Traumatic intraocular hemorrhage may be resolved without sequelae within one-two days.

Medical management was the best interference during the initial period, even if total hyphema with moderately elevated intraocular pressure is present. Most cases of fresh liquid and non clotted hyphema even if it was total was resolved within five days from the medical treatment.

Those cases of hyphemas resulting from iridocyclitis, demanded a long period of time from antibiotic-corticosteroid administration until the inflammation was subsided. In certain cases which did not respond to the medical treatment within five days, surgical interference was adopted.

Surgical intervention was obligatory if the intraocular pressure is elevated or if hyphema is large, clotted and black. In hyphemas followed by an increase in intraocular pressure, I.V. administration of 1-2 g/kg B.W. 30% urea solution with topical application of 2% pilocarpine eyedrop every five to ten minutes reduces the intraocular pressure temporarily and may hasten absorption of the hemorrhage.

Secondary hyphema, tearing of the iris or anterior lens capsule may be supervene during surgical intervention of some cases of hyphemas. The most and serious post-operative complications were endophthalmitis and/or synechiae specially in those cases whom suffering from an organized and clotted hyphema.

DISCUSSION

Small hemorrhages in the anterior chamber of the eyeball frequently occur as a result of tears of the iris stroma or sphincter (Fig. 6). More severe hemorrhages, which tend to be recurrent, usually originate from tears in the iris root and the

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anterior portion of the ciliary body and may extend posteriorly to involve the major arterial circle.

The iridocorneal angle is of considerable clinical significance as it contains the main routes by which aqueous humor leaves the eye. SINSKEY and KRICHESKY (1961) stated that the trabecular outlet and the canal of Schlemm constitute the pathway for clearance of blood from the anterior chamber. I did not consider the absorption of blood by the iris to be significant, although DUKE-ELDER, et al. (1972) stated that the anterior surface of the iris can be a site of absorption.

Prognosis of any case of hyphema was directly related to the volume of blood in the anterior chamber, its duration and their characteristics. Traumatic hyphema that involve 3/4 to the entire anterior chamber can obscure additional damage; those occupying one half or less of the volume of the anterior chamber have a good prognosis.

Secondary hemorrhages may be anticipated between the second and seventh days after trauma. Most cases of secondary hemorrhage progress to total hyphema.

The formation of synechiae is a complication that may be noted in animals with traumatic hyphema. This problem is caused by prolonged iritis and/or organization of the clot in the anterior chamber. However, the tendency for synechiae to occur is greater in animals who have undergone surgery for the hyphema. Glaucoma is a very frequent complication of traumatic hyphema and occurs still more often with secondary hemorrhages, slight recurrent bleeding may not affect the intraocular pressure but, if it is total or if it is black, a rise in pressure usually ensues. Increased intraocular pressure are encountered in all animals with total hyphema, and this suggests that any animals with total hyphema, extensive subconjunctival hemorrhage, and normal or low intraocular pressure should be suspected of having a ruptured globe. Surgical intervention at the initial four-day period produced no better results than did the medical therapy, were allowed to resolve spontaneously after four days.

As the aspirin has an inhibitory effect on blood-clotting mechanism (SMITH and CHRISTENSEN, 1971), it maintain the exuded blood within the anterior chamber in a liquid status facilitating their absorption and in the same it can results in bleeding and rebleeding. Epinephrine was used immediately after injury as an effective vasoconstrictor for controlling bleeding. Steroids was used to reduces hyperemia and consequently reduces the risk of the secondary hemorrhage.

Prior to surgical interferences, controlling of the intraocular pressure within the normal limits must be put in consideration. As the use of anterior chamber paracentesis for glaucomatous hyphema, leads to sudden decrease in the intraocular pressure which may induce secondary hemorrhage, forward displacement of the anterior uvea, closure of the iridocorneal angle, choroidal hemorrhage, and retinal detachment.

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If a clot is allowed to stay longer than five days, it will extend into the recesses of the angle and will become firmly situated (Fig. 4). When operating for removal of a such clot, I advocate a large incision. Small incisions are not useful and may even be dangerous. One can not see, with any degree of certainty, the iris or the edge of the clot; as a result the entire iris may inadvertently be extracted along with the clot.

The use of corneal incision, although it leaves a slight peripheral corneal scar, it was preferable than limbal and paralimbal incisions. The corneal incision faraway from the iridocorneal angle and thus prevent the risk of secondary hemorrhage from the root of the iris during surgical manipulation.

Fibrinolysin was used to help in dissolving the blood clot within the anterior chamber, but it is not without hazards, since it may produce corneal edema by virtue of its toxic effect on the endothelium (SCHEIE, *et al.* 1963).

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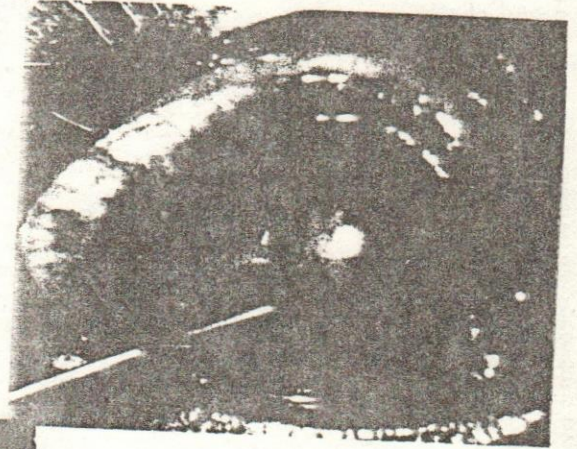
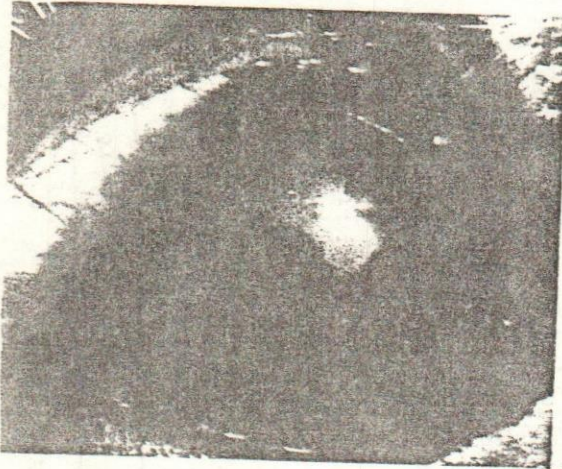
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Table (1): Types of hypheemas in different domestic animals

Types of hypheemas	Donkey	Cattle	Buff.	Sheep	Goat	Camel	Dog	Cat	Total
1) According to the causes	14	8	7	13	5	16	5	4	72
a) Traumatico.	12	6	7	12	5	11	4	4	61
b) Non traumatico.	2	2	-	1	-	5	1	-	11
2) According to the form									
a) Primary.	12	6	7	12	5	11	4	4	61
b) Secondary.	6	3	-	3	1	5	2	-	20
3) Volume of blood									
a) Small (Includ % of the anterior chamber).	2	1	-	2	2	2	1	-	10
b) Moderate (Includ % of the anterior chamber)	5	1	-	1	3	5	1	2	12
c) Large (Includ % of the anterior chamber)	4	3	4	6	-	6	-	2	25
d) Total (Includ the entire anterior chamber).	3	3	3	4	-	3	3	-	19
4) Duration									
a) Fresh (up to seven days).	8	6	7	8	4	11	3	4	51
b) Old (from 7-14 days).	4	1	-	4	1	3	2	-	15
c) Prolonged (over 14 days).	2	1	-	1	-	2	-	-	6
5) Characteristics.									
a) Liquid.	8	6	7	8	4	11	3	4	51
b) Clotted.	2	1	-	1	-	2	-	-	6
c) Mixed.	4	1	-	4	1	3	2	-	15

N.B.: In fact secondary hypheemas were 11 in number and during surgical manipulation 9 cases of the primary hypheemas undergo rebleeding and then it were considered as secondary hypheemas.



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