The role of tranexamic acid (Cyklokapron) in the treatment of traumatic hyphaema

K. Sukumaran, MBBS., DOMS
Department of Ophthalmology
Faculty of Medicine
University of Malaya

Summary

Thirty-five patients with traumatic hyphaema were studied. One group of 18 was treated routinely and the other group of 17 was treated additionally with cyklokapron (tranexamic acid) orally. Patients with other serious ocular injuries were excluded. The incidence of secondary haemorrhage, speed of recovery and the final visual acuity were noted. It was found that the majority of patients treated with tranexamic acid from the day of admission did not have secondary haemorrhage, though it took a little longer for the hyphaema to clear. The importance of treating all patients with traumatic hyphaema on admission with tranexamic acid is emphasised.

Introduction

Frank bleeding into the anterior chamber frequently follows contusion injuries of the globe. Blood in the anterior chamber forms a fluid meniscus at the most dependent portion of the anterior chamber. In some cases, the original hyphaema, which may be relatively minor, is followed by severe bleeding 24-48 hours after the initial injury.

At present, traumatic hyphaema is treated in the University Hospital routinely with binocular patching, bed rest, sedation and analgesics. With the increase in traumatic hyphaema through sports injuries and other accidents, clinical study of the efficacy of oral tranexamic acid in the treatment of traumatic hyphaema was carried out in this Hospital and its definitive advantage is shown.

Materials and Method

Studies were carried out on 35 patients who were divided into two groups of 18 and 17 each. Group A was treated routinely and Group B, in addition was given 25mg per kg body weight of tranexamic acid per day divided into three doses for seven days. Patients with hyphaema who had other serious ocular or facial injuries were excluded.

The first group of 18 patients (GROUP A) was treated as follows: On the first day of admission– (a) bilateral patching (b) bed rest (c) sedation (d) analgesics when required and (e) topical steroid drops from the third day for a week.

The second group of 17 patients (GROUP B) was treated as follows: On the first day of admission– (a) bilateral patching (b) bed rest (c) sedation (d) analgesics when required (e) oral tranexamic acid (f) topical steroids from third day for a week.

Table I

Degree of Hyphaema on Admission

Group A		Group B*	
Height mm	**No. of patients**	**Height mm**	**No. of patients**
0-1	4	0-1	4
2-3	6	2-3	6
4-5	5	4-5	5
6-7	3	6-7	2

* (Treated with tranexamic acid)

Table II

Day hyphaema cleared (including secondary haemorrhage)

	Group A	Group B
	18 patients	**17 patients**
Day	**No. of patients**	**No. of patients**
1	4	3
2	2	1
3	3	1
4	2	2
5	1	2
6	2	3
7	3	3
8	1	1
		1

Results

Among the causes given by patients, indulgence in sports namely badminton, squash and football accounted for 83% of the hyphaemas.
80% of the patients in this study were below 30 years old. All 35 patients were males.

TABLE I shows the degree of hyphaemas in the two groups of patients. Group A was treated routinely and Group B was additionally, given tranexamic acid in the appropriate dose mentioned. Eight patients in each group with height of hyphaema of 0-1mm included six patients who had microscopic hyphaema. Patients whose hyphaema was more than 7mm were not included in this study as their numbers were negligible.

TABLE II shows the day hyphaema cleared. The clearing of secondary haemorrhage was also included in both the groups in Table II. On the fifth day, 66.6% of patients in Group A had no hyphaema. Whereas in Group B, 53% of the patients had no hyphaema on the fifth day. Some 33.3% of the patients in Group A and 11.8% in Group B had secondary haemorrhage between second and third days. In Group A, 66.6% of the patients who did not have secondary haemorrhage, had the primary hyphaema clear on the fifth day. All patients in Group A had no hyphaema on the eighth day whereas in Group B it took eleven days for the hyphaema to clear.

94.4% of patients in Group A and all the patients in Group B had a final visual acuity of 6/9 or better, six weeks later after correction. There were no significant differences in both groups statistically.

Discussion

Traumatic hyphaema is usually uneventful since the blood in the anterior chamber is reabsorbed within a week or so leaving no ocular damage. However, if it is complicated by a secondary haemorrhage it is potentially dangerous. Usually such a haemorrhage occurs between the second and fifth day and is more pronounced than the initial one which may eventually result in secondary glaucoma and corneal blood staining which may lead to blindness.[1]

Colin put forward the theory as early as 1953, that the aqueous dissolves the fibrin of the clot, and so causes the arteries to bleed again.[2] As is practiced today, patients are kept immobile with bed rest so that the fragile haemostatic clot is protected from mechanical trauma and dislodgement.[2]

Later evidence showed that rebleeding is due to a premature dissolution of the haemostatic plug sealing the site of the vascular lesion.[3] The iris is very rich in fibrinolytic activators, the proximity of the iris to the haemostatic clots is bound to speed up its dissolution. The clot in the anterior chamber is made of blood diluted with aqueous and it is well known that the diluted blood clots are especially sensitive to fibrinolytic enzymes.[2]

Assuming this as a cause of rebleeding, it is natural to try fibrinolytic inhibitors in the treatment of hyphaema. The primary aim of such treatment is to delay the dissolution of the clot and allow the proliferating cells completely to seal the gap in the vessel. Clinical work has shown that anti-fibrinolytics have a preventive effect on rebleeding.[4,5]

It has also been shown through clinical studies that patients being treated with anti-fibrinolytics can be mobilised without risking rebleeding.[5,7,8,9] However, in this study both groups of patients were immobilised with bed rest.

Tranexamic acid, a derivative of Aminocaproic acid which is marketed as Cyklokapron, acts by inhibiting fibrinolytics.
Though tranexamic acid delays the reabsorption of the blood clot in the anterior chamber in traumatic hyphaemas as shown in TABLE II, the rate of rebleeding is markedly reduced in patients treated with tranexamic acid.[5,6] In this study, comparatively 66.6% and 53% of Groups A and B respectively had no hyphaema on the fifth day, 33.3% and 11.8% of Groups A and B respectively had rebleeding. The visual outcome after blunt trauma to the eye has been shown to depend on the ocular damage sustained at the time of injury.[10]

Conclusion

This study shows the tranexamic acid is useful in the prevention of secondary haemorrhage in patients with traumatic hyphaema. And as such, treatment with anti fibrinolytics should replace the routine treatment, in order to avoid serious complications such as corneal staining or secondary glaucoma which can cause blindness.

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