

Hyphaema and badminton eye injuries

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Introduction

THE AUTHOR HAS BEEN impressed by the frequency of hyphaema due to badminton injuries, especially during the period of the 1970 Thomas Cup finals. This study was undertaken to determine the incidence, level of hyphaema, complications, the final visual results and any possible preventive measures.

Material and Method

The study was conducted at the University Hospital and covers a period of 3½ years, 1968 to June 1971. The criteria for inclusion were (a) traumatic hyphaema within 48 hours of injury and untreated before hospitalisation (b) only blunt injuries (without any evidence of perforation) and (c) without previous ocular disease. 72 patients were admitted from various causes of which badminton accounted for 40 (55.6%) and only this cause is being analysed in the present study.

The following data was compiled for each eye: (a) age, (b) type injury, (c) visual acuity, (d) extent of hyphaema, (e) ophthalmoscopic findings, (f) complications, (g) therapy, medical and surgical and its efficacy, (h) final result and visual acuity.

The patients were given standard treatment: bilateral eye patches, chloromphenicol drops, complete bed rest for five days with the head elevated (2 pillows), adequate sedation, analgesics if needed

and daily examination; miotics and mydriatics were avoided. Acetazolamide was given if the tension was raised. Surgical intervention was done only when medical therapy was ineffective in full hyphaema, especially with blood clot or due to glaucoma from the initial or secondary bleeding.

Results and Discussion

Table I lists the causes of hyphaema in 72 cases. Badminton injury is the commonest cause in this country accounting for 55.6% and the discussion is confined to this.

Table II shows the incidence with a peak over a 3-month period (May to July), preceeding, during and following the 1970 Thomas Cup finals. There are undoubtedly many patients who seek no medical care or who are treated by their family physicians, but for this the figure may have been higher. Out of the 40 cases, six were caused by the racket of the double's partner, while the rest was due to the direct effect of the shuttlecock both from the partner and from the opponent.

Table III — 17 cases of hyphaema with a level up to 25% cleared spontaneously, while 25% to 50% accounted for ten of which three had secondary haemorrhage; two of these required surgical evacuation because of increased tension. Fifty to 75% of the group accounted for seven cases of

TABLE I
Causes of Hyphaema

Causes	No.	%
Stone	7	9.6
Stick	7	9.6
Blows, fists, elbows, etc	4	5.6
Badminton	40	55.6
Other sports	4	5.6
Toys	3	4.2
Industrial	4	5.6
Home accidents	3	4.2
Total	72	100.0

TABLE II
Incidence

1 9 6 8		7
1 9 6 9		6
1 9 7 0	May 5	21
	June 6	
	July 6	
Remaining months	4	
1 9 7 1	Jan — June	5

TABLE III
Degree of Hyphaema
(on admission)

% of anterior chamber filled	No.	Surgically treated
0 to 25%	17	—
25 to 50%	10	2
50 to 75%	7	3
75 to 100%	6	4
Total	40	9

which three required surgery, while above 75%, four of the six needed evacuation. Only when the blood filling the anterior chamber changed from a

TABLE IV
Day Hyphaema Cleared
(Medically treated — 34 cases)

Day	1	2	3	4	5	6	8
No	2	8	6	6	5	2	2

bright red to a dark colour, or due to increased tension uncontrolled by Diamox or a danger of blood staining of the cornea was surgery undertaken. We could conclude that cases of less than 50% level will clear spontaneously, usually between the 2nd to 5th day, (Table IV), if there was no secondary haemorrhage and cases of over 75% would increasingly require surgery because of slow reabsorption, blood clot, glaucoma or the danger of blood staining of the cornea.

TABLE V
Incidence of Rebleeding
(Compared with previously reported series)

Author	Total no. of cases	Cases of Secondary Haemorrhage	%
Thygerson (1952)	29	8	28
Loring (1958)	56	16	29
Greason (1962)	200	12	6
Shea (1963)	113	15	13
Present study			
(a) all cases	72	12	17
(b) Badminton	40	4	10

Table V: The rate of secondary haemorrhage is 17% for all cases and 10% for badminton compared with the earlier series of Thygerson 29%, Loring 28%, Gregerson 6% and Shea 13%. We have followed the strict conservative regime of Shea and Greason as stated before. Temporary elevation in intravascular pressure brought about by activity tend to increase the chance of secondary haemorrhage (Thygerson) especially from the 2nd to 5th day (Morriss). Some of the full hyphaema may probably be a direct continuation of an increase in bleeding present from the onset of injury and in these cases, the separation between the primary and secondary becomes difficult.

Table VI: The age distribution shows a peak between the 11 to 20 age group. This is the group

HYPHAEMA AND BADMINTON EYE INJURIES

TABLE VI
Age Distribution

Age group	All cases	Badminton
0 — 5 yrs	5	—
6 — 10	11	4
11 — 15	14	12
16 — 20	18	15
21 — 25	11	6
26 — 30	5	2
31 and above	7	1
Total	72	40

which mainly plays this game. These active youths should be hospitalised for strict bed rest especially to avoid secondary haemorrhage.

Tables VII & VIII: Visual prognosis is influenced by the damage to the other structures rather

TABLE VII
Complications

Type	No.
<i>Pupillary abnormality</i>	
(a) Traumatic mydriasis (on admission)	18
(persisting after 2 months)	6
(b) Posterior synachae	3
Traumatic cataract	5
Vitreous haemorrhage	4
Macular oedema	8
Macular changes	5
Secondary haemorrhage	4
Blood stained cornea	1
<i>Glaucoma</i>	
(a) Occuring at the time of initial injury	4
(b) Associated with secondary haemorrhage	2
(c) Occuring later	1

than to the hyphaema per se. One or more lesion may be present in the same eye. Cataract is not always evident initially. In three of the cases, the opacity remained localised and maintained good

TABLE VIII
Final Visual Acuity

Visual Acuity	All Badminton Injury	Surgically treated
6/6	21	4
6/9	7	3
6/12	4	1
6/18	2	
6/24	2	
6/36	1	
6/60 or worse	3	1
Total	40	9

vision despite the opacity, two accounted for vision of 6/60 or worse. In vitreous haemorrhage (4) the visual acuity was mainly reduced initially to counting fingers but fortunately all returned to 6/6. Macular or para macular oedema accounted for eight cases — five of which resulted in macular change and this impairment (6/18 to 6/24) is permanent. Glaucoma accounted for seven cases — three settled with medical regime, three required immediate surgery and one three months later; only two resulted in a vision of 6/60 or worse.

The surgical results of evacuation have been good in this series except for one case of blood staining of cornea because the consent for surgery was withheld by the parents for 48 hours. The decision to undertake surgical intervention should be made before irreversible changes take place. In the final result, 52.5% had a vision of 6/6. Prognosis becomes guarded when there are associated complications especially macular change and cataract. Vision of 6/18 or worse accounted for 20%.

Preventive Aspect. In none of the cases was glasses worn at the time of the accident. A number of these cases could have been avoided, nine of them being myopes; four were uncorrected while five took off their glasses while playing. This could have been avoided if the vision was corrected and glasses worn during play — preferably tied on. Since protective goggles cannot be worn to prevent eye injuries, wearing of glasses in those with refractive errors (such errors have a tendency to slow reflex) adequate supervision and proper instruction should lower the incidence as most of these tend to occur in the young and the inexperienced (11 to 20) age group.

Conclusion and Summary

1. Badminton injury was the major cause of hyphaema 55.6% in this country.
2. If level of hyphaema was up to 50% of A/C the haemorrhage will clear spontaneously, if there was no secondary bleeding.
3. Secondary haemorrhage accounted for 10% — the low figure is due to strict bed rest and hospitalisation. Decision for surgery should not be left too late as the changes (glaucoma and blood staining of the cornea) may be irreversible.
4. In the final result, 52.5% had a 6/6 vision.

Permanent impairment of vision to 6/18 or worse occurred in 20%; major cause for the loss was due to macular change and cataract.

5. Vision should be corrected and those with glasses should wear them during play, as most of them were inexperienced (11 to 20 age group), adequate supervision and proper instruction should lower incidence.

Acknowledgements

The author wishes to express his thanks to Dr. Vincent E.S. Ooi for his helpful advice and to Miss T.C. Yap for her assistance in preparing this work.

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