The Assessment of Cataract Formation to be Related to Duration and Height of Intraocular Pressure in Acute Angle Closure Glaucoma

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AKUT AÇI KAPANMASI GLOKOMUNDA GÖZ İÇİ BASINCININ SÜRESİ VE YÜKSEKLİĞİ İLE İLİŞKİLİ KATARAKT TEŞEKKÜLÜNÜN DEĞERLENDİRİLMESİ

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SUMMARY

Cataract formation in 146 eyes of 136 patients who had peripheral iridectomy to treat acute angle-closure glaucoma, hat been evaluated retrospectively. The follow-up was between two and sixteen years.

In 72%of cases, peripheral iridectomy controlled the glaucoma without any need for additional medical or surgical therapy.

Cataract formation has been shown to be related to duration of the acute angle-closure attack and height of the intraocular pressure. In 34% of 146 eyes cataract developed, which had the acute attack as opposed to 18% in the fellow eye. Cataract formation usually occurred for at least one year after surgery.

Peripheral iridectomy, if performed adequately, is a safe and effective method of treatment of acute angle-closure glaucoma and an entirely effective prophylactic procedure in preventing an acute angle-closure attack in the fellow eye.

***Key* Word*: Acute** angle **cloture glaucoma,** peripheral **iridectomy, cataract**

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ÖZET

Akut** kapalı **açı glokomunu tedave itmek** için **periferik iridektomi** yapılan **136** hastanın **146** gözünde **katarakt** oluşumu **retrospektif olarak** değerlendirildi. **Hastalar** iki-onaltı **yıl takip edildi.

*Hastaların **% 72 sinde herhangi bir ilave** tıbbi **veya cerrahi tedavi** yapılmaksızın, **periferik iridektomi ile glokom kontrol** altına alındı*

***Katarakt** gelişmesinin, **akut** atağın süresi **ve** göz içi basıncının yüksekliği ile ilişkili olduğu gösterildi. **Akut atak** geçirmiyen gözlerin **%18 inde katarakt** görülürken, **akut atak** geçirenlerin **%34 de katarakt** gelişti. **Katarakt** gelişmesi **ameliyattan en az bir yıl sonra** görüldü.*

***Şayet uygun bir** şekilde yapılırsa, **periferik iridektomi, akut** kapalı **açı glokomunun tedavisinde** tamamıyla **etkili bir metoddur.** Aynı şekilde, öbür gözde **akut bir** kapalı **açı glokom** atağının önlenmesinde **de etkili bir** önleyici işlemdir.*

Anahtar Kelimeler: Akut kapalı açı glokomunu, periferik iridektomi, katarakt

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INTRODUCTION

Iridectomy has been the standard method of the treatment of angle closure glaucoma since its introduction by Von Graefe (1).;further developed by Chandler (2). It has been convincingly shown that peripheral iridectomy is an effective method of treatment of primary angle closure glaucoma (2,16). The purpose of this study is to determine whether there is a correlation between duration angle closure attack, height of intaocular pressure and catarct formation or not.

MATERIALS AND METHOD

We have reviwed retrospectively the results of peripheral iridictomy in 146 eyes of 136 patients with acute angle-closure glaucoma, who had peripheral iridectomy as the initial therapy and 126 fellow eyes who had peripheral iridectomy prophylactically between 1965 and 1980 at Addenbrooke's Hospital in Cambridge

In the analysis of the data, particular attention has been paid to the occurance of complications and

Table -1

Delivery of Patients Regarding to Age

Age	Number Patients	%
30-40	6	4,10
41-50	6	4,10
51-60	23	15,75
61-70	36	26,47
71-80	48	35,29
81-90	14	9,58
91*	3	2.05
Total	136	100

Table - II

Delivery of the Eye Related to Duration of 1 .OP

Duration l.O.P.	Number Patients	%
24 hours or less	53	36,30
2 days	31	21,23
3 days	26	17,80
4 days	23	15,75
5 days	13	8,90
Total	146	100

Table - III

Follow-up

Years	Number Patient	%
1- 3	41	30,14
4- 6	29	21,32
7- 9	32	23,52
10-12	22	16,17
13	12	8,82
Total	136	100

the relations between cataract formation and duration and/or height of intraocular pressure. The foilow-up the patients ranged from two years to sixteen years (Table -3).The prophylactic peripheral iridectomy was undertaken in fellow eyes of all cases after ttie eyes having acute attack, had been treated.

Of 136 patients 61 (44.85%) were male. 75(55. 15%) were female. The ages of the patients ranged from 30 years to 94 years Table-!. 53 (36.30%) of 146 eyes, were operated in 24 hours or less of onset of the acute attack, 31 (21.23%) within for days and

Table - IVa,b

Delivery of Patients Regarding to Visual Acuity

(a) preoperative visual acuity

Visual acuity	Number Patient	%
6/6	10	6,84
6/9	18	12,32
6/12	25	17,12
6/18	33	22,60
6/24	16	10,95
6/36	30	20,54
6/60	8	5,47
3/60	2	1,36
C/F	3	2,05
HM	1	0,68
Total	146	100

C/F= Counting finger

(b) Visual acuity-final exam

Visual acuity	Number Patient	%
6/6	8	5,47
6/9	13	8,90
6/12	18	12,32
6/18	10	6,84
6/24	8	5,47
6/36	5	3,42
6/60	10	6,84
3/60	16	10,95
C/F	18	12,32
H/M	16	10,95
L/P.	23	15,75
NLP	1	0,68
Total	146	100

HM--Hand movement L/P Light Pereption
NLP: No Light Percetpion

13 (8.90%) within five days after the acute attack (Table-2)

Of 146 eyes, in 140 (95.89%) had a visual acuity of 6/60 or better preoperatively. At the end of a mean period of eight years follow-up 72 eyes (49.31%) had a visual acuity of 6/60 or better. Preoperative and final visual acuity results are summarized in Table-4a,b.

In 106 eyes (72.60%), acute angle closure glaucoma was completely controlled by peripheral iridectomy alone. In 15 eyes (10.27%), condition was controlled by peripheral iridectomy and additional pilocarpine therapy. Of 146 eyes, in 25 eyes (17.12%) had a persistent intra-ocular pressure above 21 mm/ Hg. in spite of additional medication and needed a filtration operation, 21 eyes (14.38%) treated by trabeculectomy and 4 eyes (2.73%) underwent Krasnov s

Table V a.b.c

Delivery of Patients With Regarding to I .O.P

(a) Preoperative 1 -O.P

I.O.P **mm/Hg**	Number Patients	%
40-50	84	57,53
51-60	59	26,71
61-70	19	13,01
7 f	4	2,7 8
Total	146	100

!.o.p=-Intra ocaJar pressure

(b) !.O.Pjust after operation

S.O.P. mm/Hg	Number Patient	%
10 or le»	10	6,84
11-20	95	65,06
if	41	28,08
Total	146	100

(c)l.().P.=Final exam.

i .O.Pmm/Hg	Number Patient	%
10 or less	3	2,05
11-20	138	94,52
2 f	5	3,42
Total	146	100

Table - VI

Necessary Further Operations

Time	Type of operation	Number Patient	%
0- 1	Trabeculectomy	6	4,10
months	**Krasnov**	I	0,68
2 - 4	**Trabecule-.: tomy**	5	3,42
months	**Krasnov**	2	1,36
5 - 6	Trabeculectomy	2	1,36
months	**Krasnov**		
6	Trabr-ooleci omv	8	5,47
months	**Krasnov**	**1**	0,68
Total		25	17,12

iridoeyeloretraetion (Table-6). Five eyes (3.42%) of 146 eyes had an intraocular pressure above 21mm/Hg. at the end of follow-up in spite of treatment. The results of pre-operative intraocular pressure, just

Table - VII

Delivery of Cataract Formation With Respect to Time

Time	3-6 months	6-12 m.	1-2	3+Y year	Total cataract	Total eye	%
Type of eye							
Glaucora atous eye	5	4	32	9	50	146	34,24
Fellow eye	**1**	1	10	11	**23**	126	18,49

Table - VIII

Delivery of Cataract Related to Height and Duration of 1 .O.P

Height of l.o.p	40-50	**51 J-**	Total Cataract	%
Duration of attack				
24hoursor less	5	8	IS	26
2 clays	**2**	3	5	10
3 days	4	***"i***	***i***	14
4 days	4	***5***	9	18
5 da\ s	6	10	16	32
Total			50	**100**

l.()P'-= Intra ocular **pressure**

i > ' . •*>;•; at the ***i*** rnacu- . , a , t . -i *HA* eye was i - - -ion.Pre- - ;(>%) with - . • **f** though veloped •T • '. . . .• a- ***in*** 50 eyes i . iced eyes. hi ••fter the — i. _ t- - * ; • - -d months - _ • -.'-tn 6 and '__ .: • -f• -' ***A.vi*** 9 three or more years after the acute attack.

Of 126 non-giaucomatous fellow eyes in which prophylactic iridectomy was carried out, cataract has developed in 221 (18.49%) during one to 16 years follow-up. One of these developed between three and six months after surgery, one between 8 and 12 months, 10 between on<; and two years and 11 developed in 3 or more years after iridectomy. Results related to catarct formation are to be seen in Table-'?.

The analysis shows that 13 (26%) of 50 catarcts were seen in eyes in which acute angle closure ittack has lasted for 24 hours or less. This included ail 6 eyes which were known to have cataracts pre-operatively. 5 of 50 catarcts were seen in eyes in which acute

Table - IX

State of Iris

State of iris	Number Patient	%
Spiralling iris	15	10,27
Atrophy of iris	8	5,47
Total	23	15,75

attack has lasted 2 days, 7 were seen those in which attack has lasted 3 days, 9 were seen those in which attack has lasted 4 days and 16 were seen in eyes in which attack has lasted 5 days (Table-8)

23 (15.75%) of 146 eyes showed presence of iris atrophy or spiralling at the time of presentation (Table-9)

Of 146 eyes, in 26 (17.80%) field defect was found during one to sixteen years follow-up.

DISCUSSION

In our series of 146 eyes, intraocular pressure was controlled in 72% of cases, by peripheral iridectomy alone. This rate is as high as 99% in Krupin et al's series (13). In our series, 17.12% of cases needed filtration surgery. This rate is 8% in Robin and Pollack's series (17), 17% in Lowe's series (5), 1% in Krupin et al'study (13). At the end of a mean period follow-up of 8 years, 3% of 146 eyes had an intraocular pressure above 21 mm/Hg. In Robin and Pollack's it is 11%, Krupin et al's is 1%. Cataract formation varies markedly in the previously published series. As 4% of our cases had lens opacities preoperatively, during one to sixteen years follow-up catarct formation was seen 34% of 146 eyes. Godel and Regen (16) reported that catarct formation was seen in 52% of their cases. In Lowe's study, the rate of cataract formation is 60% (5). We compared 146 eyes which had an acute attack with 126 nonglaucomatous fellow eyes which prophylactic peripheral iridectomy was performed in regarding to cataract formation. Cataract formation was found in 18% of 126 non-glaucomatous fellow eyes during the period of follow-up. This is not outside the range that would be expected in this age group. Shaffer and Rosenthal (18) reported that catarct would be developed in 4% of normal individual having the ages of 61 to 70 years, 19% between the ages of 70 and 75, in 27% between 75 and 90 years. The catarct seen in the fellow eyes usually developed after three years or more and had a slowly progressive course although catarct developed shortly after surgery in one eye. It is possible that the surgery influenced the course of cataract in these patients.

In our stduy, we have found that there is a relationship between cataract formation and the duration of acute angle closure attack and the height of intra ocular pressure in that the longer the attack lasts the more the catarct formation increases (Table-8). It would appear from these results that cataract may develop or increase if it is already present before the acute rise of intraocular pressure.

In 15% of cases iris atrophy or spiralling was seen but no direct relationship could be shown between cataract formaiton and spiralling and atropy of the iris. Many authors have been claiming that peripheral iridectomy is the effective method in the treatment of acute angle closure glaucoma (6,10,13). We believe that peripheral iridectomy is a safe and effective method of the treatment of acute angle-closure glaucoma and an entirely effective prophylactic procedure in preventing an acute angle closure attack in the fellow eye, if it is performed adequately.

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