Table I. Effect of indomethacin on the aqueous PGE of rabbit eyes treated with arachidonic acid

	Mean PGE ± S.E. at 30 minutes			
	Arachidonic acid (2%)		*Peanut oil*	
	pg./ml.	*No.*	*pg./ml.*	*No.*
No indomethacin	1,024 ± 297*, †	23	347 ± 88	22
Indomethacin (50 mg. per kilogram)	132 ± 18	24	199 ± 36	24

*Significant difference between means of eyes treated with arachidonic acid and eyes treated with peanut oil, $p < 0.05$.
†Significant difference between means of eyes of animals treated with and not treated with indomethacin, $p < 0.005$.
The other differences were not statistically significant.

1973; manuscript accepted for publication June 7, 1973.

Key words: indomethacin, arachidonic acid, prostaglandin E.

REFERENCES

1. Podos, S. M., Becker, B., and Kass, M. A.: Indomethacin blocks arachidonic acid-induced elevation of intraocular pressure, Prostaglandins 3: 7, 1973.
2. Podos, S. M., Becker, B., and Kass, M. A.: Prostaglandin synthesis, inhibition, and intraocular pressure, INVEST. OPHTHALMOL. 12: 426, 1973.
3. Vane, J. R.: Inhibition of prostaglandin synthesis as a mechanism of action for aspirin-like drugs, Nature New Biology 231:232, 1971.
4. Kass, M. A., Podos, S. M., Moses, R. A., et al.: Prostaglandin E_1 and aqueous humor dynamics, INVEST. OPHTHALMOL. 11: 1022, 1972.
5. Jaffe, B. M., Behrman, H. R., and Parker, C. W.: Radioimmunoassay measurement of prostaglandins E, A, and F in human plasma, J. Clin. Invest. 52: 398, 1973.
6. Podos, S. M., Jaffe, B. M., and Becker, B.: Prostaglandins and glaucoma, Br. Med. J. 4: 232, 1972.

Argon laser photocoagulation of ciliary processes and pigmented pupillary membrane in man.

THOMAS J. ZIMMERMAN, DAVID M. WORTHEN, AND GARY WICKHAM.

The purpose of this report is to convey our experience using argon laser photocoagulation to burn pigmented pupillary membranes and ciliary processes of human eyes. Two patients, a man and woman both middle aged, presented with pigmented pupillary membrane following cataract extraction. The man had had an aspiration of a traumatic cataract and the woman an intracapsular removal of a cataract associated with uveitis and rheumatoid arthritis. Both cases had been considered for dissection of the membrane. As an alternative they were offered laser photocoagulation with the full understanding that it was an experimental procedure. In both cases a gonioscopic lens was used to deliver the laser at an angle so that any of the beam passing through the membrane would come to rest in the pars plana area. A 50 micron beam size was used, delivering either 50 or 100 mw. over a period of 1/10 of a second for each treatment. The lady received a total of 0.51 joules and the man 0.16 joules. With the laser burns there was no explosion, rather an opening and retraction of the membrane. No bubble formation occurred. Best corrected vision before treatment for the lady was 20/200 and following treatment was 20/60. The man's vision improved from 20/50 to 20/20. His vision has been maintained to this time. The lady's vision has fluctuated as a function of the degree of inflammation associated with her continuing uveitis, but was stable and in remission for at least three months following the initial treatment. There was no uveitis associated with the laser treatment. Both cases had obvious central openings after treatment which have remained patent to date. Our impression is that the use of argon laser for photocoagulation of such pigmented membranes is worthy of consideration.

The second attempted treatment did not fare as well. In four patients with neovascular glaucoma, argon laser photocoagulation of the ciliary body and ciliary processes was carried out.[1] That was accomplished using a Franklin three-mirror lens which had a 3 mm. plastic ball cemented to the outside rim.[2] The plastic ball served to depress the ciliary body area and bring it into view of the mirror located opposite in the gonioscopic prism. The treatments were done during a number of separate sittings generally using a 200 micron beam at 300 to 500 mw. over 2/10 second. Fifteen processes were treated at a time and eventually all were photocoagulated. The initial hope was to be able to vary the effect depending on the number of processes treated. A treatment was considered complete when all the processes in the area to be treated were white overall the area exposed to view. The processes appeared to stay white over a two to three month period.

The patients were comfortable with only topical

Table I

Patient	No. of treatments	Total joules	Initial pressure	Average drop	Duration of drop (days)	Current pressure	Time elapsed (weeks)
JED	6	215	OD 60 OS 62	5 mm. Hg	6	OD 36 OS 35	10
ALD	7	114	OD 62 OS 16	3 mm. Hg	10	OD 68 OS 18	8
JBS	8	87	OD 59 OS 25	11 mm. Hg	3	OD 54 OS 22	14
MSF	2	28	OD 18 OS 38	6 mm. Hg	4	OD 20 OS 40	10

anesthesia and did not require retrobulbar or other anesthetic. Table I lists the patients, the number of treatment sessions each had, the total joules delivered during all of those treatment sessions, the initial pressure when considered for treatment, the average pressure drop and duration with each treatment, the pressure at the most recent visit, and the time elapsed since the most recent laser treatment. Glaucoma medications were unchanged throughout the laser treatment period. Patient JED was diabetic and had bilateral neovascular glaucoma. Patients ALD and MSR had central retinal vein occlusions. Patient JBS had neovascularization associated with retinoschisis and retinal detachment in one eye. JSB was aphakic, the other three patients all had their lenses in place. There was no apparent difference in treating the ciliary body processes in the phakic and aphakic eyes.

The first patient had what would appear to be a dramatic drop, however, it should be noted that the other, untreated eye showed a similar drop and, therefore, this is just a fluctuation in this particular patient's case. Review of his record shows a parallel change in the pressure and apparently no long-range effect from his multiple treatments. The second patient had a slight increase in pressure when comparing his initial pressure and the current pressures. The third case had what appeared to be rather dramatic responses but had a detachment of the retina. On reattachment the pressure went up again to pretreatment values. It is possible the laser played a role in the detachment, although the retinal holes did not correspond specifically to areas of ciliary body treatment. The last patient had no significant change in ocular pressure.

Subjectively, all of the patients found this method of treatment comfortable. One patient had received cryo treatments to the ciliary body and felt the reaction to laser was nothing compared to the discomfort after the cryo treatments. However, in our hands the laser treatment was not successful in the long run, whereas, in some cases cryo treatment has been. Both would appear to be temporary. We did not see any change in either the lens or the amount of vascularization during these treatments.

After the treatment of these four patients we have decided to abandon this treatment modality, as in our hands it appears to be ineffective in the long-range lowering of intraocular pressure.

From the Ophthalmology and Research Service, Veterans Administration Hospital, Gainesville, Fla. Supported by the Veterans Administration Research Service. Manuscript submitted for publication May 22, 1973; manuscript accepted for publication June 19, 1973. Reprint requests: Dr. D. M. Worthen, Veterans Administration Hospital, Gainesville, Fla. 32601.

Key words: argon laser, neovascular glaucoma, ciliary processes, pigmented pupillary membrane, photocoagulation.

REFERENCES

1. Lee, P., and Pomerantzeff, O.: Transpupillary cyclo photocoagulation of rabbit eyes, Am. J. Ophthalmol. 71: 911, 1971.
2. Slezak, H.: Results of depression biomicroscopy of the posterior chamber, Am. J. Ophthalmol. 72: 1073, 1971.

Electron microscopic observation of a gap at the junction of the ciliary epithelium with the retina in a human eye.

J. GÄRTNER.

The membrane of Bruch is considered a five-layered continuous structure between the choroid and the retina.[1] This implies that between the choroid and the vitreous body no direct connection exists. However, in two cases of malformed human eyes, gaps in the membrane of Bruch and in the ciliary epithelium directly at the ora serrata could be histologically demonstrated, through which choroid vessels penetrate into the vitreous base.[2] In a later electron microscopic observation, ciliary capillaries were found to pierce the two nonseparated layers of the ciliary epithelium in an area between a macro- and a microcyst; situated likewise directly anterior to the ora serrata.[3]