European Journal of Ophthalmology / Vol. 16 no. 1, 2006 / pp. 30-32

Cataract surgery under systemic anticoagulant therapy with coumarin

J.B. JONAS, B. PAKDAMAN, G. SAUDER

Department of Ophthalmology, Faculty of Clinical Medicine, University Heidelberg, Mannheim - Germany

PURPOSE. *To evaluate clinical outcome of cataract surgery under systemic anticoagulant therapy using coumarin.*

METHODS. *This clinical interventional comparative nonrandomized study included 441 patients (441 eyes) consecutively undergoing standard phacoemulsification with clear cornea incision and topical anesthesia. The study group consisted of 21 (4.8%) patients for whom systemic coumarin therapy was continued despite surgery. The control group included 420 patients without anticoagulant coumarin therapy prior to surgery. Study group and control group did not vary significantly in age, preoperative visual acuity, axial length, refractive error, preoperative intraocular pressure, or surgeon.*

RESULTS. *Frequency of intraoperative or postoperative hemorrhages, intraoperative complications such as posterior capsule rupture, postoperative visual acuity, and intraocular pressure did no vary significantly ($p>0.30$) between study group and control group.*

CONCLUSIONS. *For patients under systemic coumarin therapy, the rate of surgical complications may not markedly be increased compared to patients without coumarin therapy, when standard phacoemulsification with clear cornea incisions is performed with topical anesthesia. Systemic coumarin therapy does not have to be stopped prior to cataract surgery(Eur J Ophthalmol 2006; 16: 30-2)*

KEY WORDS. *Cataract surgery, Coumarin therapy, Anticoagulant therapy, Intraoperative hemorrhage, Topical anesthesia*

Accepted: August 1, 2005

INTRODUCTION

Because cataract is an age-related disease, and because older patients often have additional diseases, such as heart valve disorders, thromboembolic problems, and cardiac arrhythmias, which necessitate systemic anticoagulant therapy, it was the purpose of the present study to evaluate whether systemic anticoagulant coumarin therapy has to be stopped, or may be continued, prior to standard cataract surgery with topical anesthesia (1).

METHODS

The comparative non-randomized clinical interventional study included 441 patients (441 eyes, 264 [59.9%] women; 222 [50.3%] right eyes) consecutively undergoing standard cataract surgery. The study group included 21 (4.8%) patients for whom systemic anticoagulant therapy with coumarin was continued despite surgery. The control group consisted of 420 (95.2%) patients without anticoagulant coumarin therapy prior to surgery. In the control group, 81 (19.3%) patients

1120-6721/30-03$15.00/0

were on aspirin therapy during surgery. Study group and group did not vary significantly in age, preoperative visual acuity, axial length, preoperative intraocular pressure, or surgeon (Tab. I). All eyes underwent standard phacoemulsification including clear cornea incision, injection of a viscoelastic substance into the anterior chamber, anterior capsulorhexis, hydrodelineation and hydrodissection, phacoemulsification of the lens nucleus, aspiration of the emulsified nucleus and the lens cortex, reinjection of a viscoelastic substance into the anterior chamber and the empty lens capsular bag, widening of the clear cornea incision at the 12 o'clock position to about 3 to 4 mm, implantation of a foldable posterior chamber lens, and aspiration of the remaining viscoelastic substance out of the anterior chamber. The corneal incisions were not sutured. All eyes underwent preoperative examination and postoperative examination at the first postoperative day including measurement of visual acuity and intraocular pressure, slit lamp biomicroscopy, and ophthalmoscopy. For 45 eyes, additional examination results were available at about 6 weeks after surgery (Tab. I).

RESULTS

The study group with coumarin therapy and the control group without coumarin treatment did not vary significantly in frequencies of intraoperative anterior chamber hemorrhages, marked postoperative hyposhagmata and rupture of the posterior lens capsule, intraoperative blood oxygen saturation, intraoperative systolic and diastolic blood pressure, postoperative visual acuity at the first postoperative day and at 6 weeks after surgery, or postoperative intraocular pressure (Tab. I). There was no difference in the results if instead of the whole control group only patients without current aspirin therapy were included for the control group.

DISCUSSION

For anesthetist and surgeon, the anticoagulated patient planned for cataract surgery has presented many problems (2). Current evidence suggests that warfarin therapy significantly improves prognosis in patients

TABLE I - COMPOSITION OF STUDY AND CONTROL GROUP

	Study group	**Control group**	**p Value**
Patients	21	420	
Age, yr, mean ± SD	71.1±11.4	72.6±10.8	0.65 (NS)
Females/males	9/12	255/165	0.11 (NS)
Body height, cm, mean ± SD	168.0±8.39	166.3±9.3	0.66 (NS)
Body weight, kg, mean ± SD	72.6±14.6	77.1±17.1	0.57 (NS)
Diabetes mellitus, n (%)	6/21 (28.6)	102/420 (24.3)	0.63 (NS)
Arterial hypertension, n (%)	10/21 (47.6)	250/420 (59.5)	0.27 (NS)
Right/left eyes	11/10	211/209	0.51 (NS)
Preoperative visual acuity, mean ± SD	0.33±0.21	0.32±0.19	0.78 (NS)
Axial length, mm, mean ± SD	23.06±1.25	23.41±1.68	0.65 (NS)
Preoperative IOP, mmHg, mean ± SD	15.8±4.6	15.3±3.6	0.97 (NS)
Keratometry, radius 1 mm, mean ± SD	7.85±0.28	7.79±0.30	0.24 (NS)
Keratometry, radius 2 mm, mean ± SD	7.56±0.34	7.59±0.29	0.74 (NS)
Refractive error, D, mean ± SD	0.38±2.83	-0.71±3.89	0.58 (NS)
Duration of surgery, min, mean ± SD	13.8±5.5	15.5±8.7	0.59 (NS)
Best-corrected postoperative visual acuity, 1st day, mean ± SD	0.40±0.23	0.38 ±0.27	0.43 (NS)
Best-corrected postoperative visual acuity, 6 weeks, mean ± SD	0.62±0.30 (n=5)	0.65±0.31 (n=40)	0.80 (NS)
IOP, postoperatively, 1st day, mmHg, mean ± SD	17.1±6.5	17.8±5.6	0.32 (NS)
Intraoperative capsule rupture, n (%)	0/21 (0)	10/420 (2.4)	0.47 (NS)
Intraoperative marked hyphema, n (%)	0/21 (0)	0/420 (0)	(NS)
Blood oxygen saturation, %, mean ± SD	98.2±1.2	98.3±1.4	0.45 (NS)
Arterial blood pressure, systolic, mmHg, mean ± SD	150.0±12.7	157.3±18.8	0.38 (NS)
Arterial blood pressure, diastolic, mmHg, mean ± SD	81.9±7.2	80.0±9.9	0.11 (NS)

IOP = Intraocular pressure

with atrial fibrillation with coexisting cerebrovascular disease, and those with non-tissue prosthetic heart valves. Inadequate anticoagulation in these groups exposes them to higher risk of systemic embolic complications, which are frequently devastating. Attempted cessation and recommencement of coumarin therapy may not only reverse anticoagulation for unpredictable periods of time but may also expose patients to a transient yet dangerous hypercoagulable state. In most instances this state represents an additive risk to the untreated disease for which warfarin is being prescribed (2). The results of the present study suggest that, using standard phacoemulsification technique with clear cornea incision and topical anesthesia, systemic anticoagulant therapy with coumarin does not have to be stopped prior to cataract surgery. Continuation of coumarin therapy during cataract surgery may prevent cardiovascular or cerebrovascular thromboembolic events due to problems in the replacement of systemic coumarin therapy by low-molecular-weight heparin therapy.

While a previous review on anesthesia for cataract surgery in patients under systemic anticoagulation found that coumarin therapy has usually been discontinued for cataract surgery (3), the results of the present study suggest that patients under systemic coumarin therapy may undergo cataract surgery with topical anesthesia without change in their coumarin treatment, particularly since previous studies have shown that topical anesthesia compares well with peribulbar anesthesia for routine cataract surgery with clear cornea incisions (4-6).

The authors have no financial or proprietary interest in any aspect of the article.

Reprint requests to:
Jost Jonas, MD
Universitäts-Augenklinik
Theodor-Kutzer-Ufer 1-3
68167 Mannheim, Germany
Jost.Jonas@ma.augen.uni-heidelberg.de

REFERENCES

1. Lee AY, Levine MN, Baker RI, et al. Randomized comparison of low-molecular-weight heparin versus oral anticoagulant therapy for the prevention of recurrent venous thromboembolism in patients with cancer (CLOT) Investigators. Low-molecular-weight heparin versus a coumarin for the prevention of recurrent venous thromboembolism in patients with cancer. N Engl J Med 2003; 349: 146-53.
2. Konstantatos A. Anticoagulation and cataract surgery: a review of the current literature. Anaesth Intens Care 2001; 29: 11-8.
3. Dick B, Jacobi FK. Katarakt-Chirurgie und Antikoagulation–gegenwärtiger Stand [Cataract surgery and anticoagulation–current status]. Klin Monatsbl Augenheilkd 1996; 209: 340-6.
4. Leaming DV. Practice styles and preferences of ASCRS members–1999 survey. J Cataract Refract Surg 2000; 26: 913-21.
5. Jacobi PC, Dietlein TS, Jacobi FK. A comparative study of topical vs retrobulbar anesthesia in complicated cataract surgery. Arch Ophthalmol 2000; 118: 1037-43.
6. Sauder G, Jonas JB. Topical versus parabulbar anesthesia for cataract surgery. Acta Ophthalmol 2003; 81: 596-9.