Société Française d'Ophtalmologie

Société Française du Glaucome
Comité de Lutte contre le Glaucome

Management of anticoagulant and antiplatelet treatments in glaucoma surgery

Written with the assistance of Florent Aptel, Esther Blumen, Emmanuelle Brasnu, Jacques Laloum, Ricardo Paletta

I- INTRODUCTION:

The management of glaucomatous optic neuropathy currently relies on lowering intraocular pressure (IOP) using drug, laser or surgical treatments. Surgery is of particular interest in the therapeutic arsenal of glaucoma: it is often a major option suggested after an escalation of treatments considered to be insufficient and allows for the most significant drop in pressure. Multiple surgical techniques are currently available but, nevertheless, perforating/non-perforating filtration surgery remains the reference. This surgery aims at forming a long-lasting filtering bleb, showing the flow of aqueous humor to the subconjunctival spaces.

II- ISSUES RELATED TO ANTICOAGULANT AND ANTIPLATELET TREATMENTS:

As the prevalence of glaucoma increases with age, general comorbidities found in subjects, who are potential candidates for filtration surgery, require regular anticoagulant or antiplatelet treatments. These treatments may adversely affect the prognosis of filtration surgery [1-4] with an increased risk of intra- or postoperative haemorrhage under local anaesthesia. These haemorrhages may have significant consequences on the filtering bleb but also on the visual function of some specific patients [2, 4]. The choice to discontinue or not these treatments will of course depend on various factors, including the general pathology allowing for - or not - such a change in therapy, but also the surgeon's personal preferences which may not be generalized [5].

II-1 Antiplatelet treatments:

These treatments are essential in the management of coronary, cerebral and peripheral vascular atheromatous diseases. They are indicated as primary prevention in the event of a high cardiovascular risk and as secondary prevention of angina, myocardial infarction, ischemic stroke or peripheral arterial disease. Combining several antiplatelet agents is sometimes required, especially after implantation of drug-eluting stents. Discontinuing antiplatelet agents may lead to significant, sometimes fatal, adverse events, especially in patients with stent implants, including stent thrombosis, myocardial necrosis or the occurrence of a stroke [6].

II-2 Anticoagulant treatments:

Prescribing long-term anticoagulants is recommended in 3 main clinical situations: cardiac arrhythmia due to atrial fibrillation, valvular diseases and the prevention of venous thromboembolism. Their discontinuation exposes the patient to a risk of thromboembolic events with potentially dramatic consequences: strokes, valve thrombosis, pulmonary embolisms...

II-3 New oral anticoagulants:

Dabigatran (Pradaxa®), rivaroxaban (Xarelto®) and apixaban (ELIQUIS®) are new direct oral anticoagulants. These molecules have an effective anticoagulant activity and are intended to replace anti-vitamin K (AVK) in some of their current indications. The risk of haemorrhage of these molecules is similar to that of AVK, knowing that the measurements of the therapeutic efficiency are neither clear nor readily available on the one hand, and that no antidote to these medicines is currently available on the other hand. The management of these drugs is similar to that of AVK and recommendations on ophthalmic surgery are not yet the subject of a consensus [7].

III- PARAMETERS TO BE CONSIDERED BEFORE ANY THERAPEUTIC CHANGE:

Filtration surgery is often suggested as last resort for eyes with advanced glaucomatous optic neuropathy presenting risk of blindness in the event of failure of the surgical procedure. While some retrospective studies suggest an increased risk of haemorrhagic complications related to glaucoma surgery when anticoagulant or antiplatelet agents are administered, with potential functional consequences [2-4], no evidence-based study has shown to date the significance of systematic discontinuation of anticoagulants or antiplatelet agents before glaucoma surgery[6, 8, 9]. Therefore, no consensus has been established and a study also emphasizes the diversity of approaches with regard to these treatments among surgeons [5].

In this context, we believe that the surgeon should have the opportunity to consider the discontinuity or not of an anticoagulant or antiplatelet treatment on a case-by-case basis, after discussion with the anaesthetist and/or the cardiologist. This decision will of course take into account the benefit-risk balance for a given patient and will depend on:

1- **The ophthalmologic context:**

- The stage of the glaucomatous optic neuropathy, the visual status of the patient, the functional status of the fellow eye.
- The planned surgical technique and ophthalmic surgical history; indeed, the assessment of the risk of haemorrhage will be different for filtration surgery and new "minimally invasive" surgeries or cyclophotocoagulation. Similarly, this assessment will be different if a second or third surgery procedure is considered or if the patient reports a previous serious haemorrhagic episode.
- The expected surgical difficulty, to which it is not necessarily appropriate to add the handling of an unexpected haemorrhage.
- The status of the ocular surface and the expected risk of surgical failure, the use or not of an antimitotic agent; an intraoperative haemorrhage may encourage the occurrence of fibrosis on the site through its subsequent coagulation cascade.

- The planned anaesthesia, a haemorrhage occurring under peri- or retrobulbar anaesthesia will not have the same consequences as under topical or general anaesthesia.
- The framework and structure where the surgical procedure is conducted: a change in therapy cannot be considered with serenity in the absence of a possible specialized opinion (anaesthetist, cardiologist...).

2- The patient's general condition:

- The disease for which the antiplatelet or anticoagulant agents were introduced.
- The type of anticoagulant: aspirin, antiplatelet agent, AVK, new oral anticoagulants or even combination of several molecules.
- Associated general factors (hypertension, overweight...).
- The risk of occurrence and consequences of a serious thromboembolism. The replacement by an injectable treatment (LMWH at curative dosage) will be considered, in particular in cases of severe or relapsing venous thromboembolism or in a patient treated for atrial fibrillation with thrombotic risk factors ($CHADS_2$ score ≥2, age >75 years, hypertension, diabetes, heart failure, history of stroke...)[7].

IV- CONCLUSIONS:

Glaucoma surgery is often suggested as a last resort after failure of other therapeutic options, and should therefore be performed under conditions enhancing the chances of success. In this regard, the temporary discontinuation of treatments - likely to encourage an intra- or postoperative haemorrhage - is sometimes considered.

To date, no or a limited number of evidence-based studies have demonstrated that the administration of an antiplatelet or anticoagulant treatment is a risk of failure of glaucoma surgery failure. Conversely, it is clearly established that the temporary discontinuation of antiplatelet agents or anticoagulants may lead to serious and sometimes fatal adverse events.

No systematic approach may therefore be recommended, and any decision to discontinue or change an antiplatelet or anticoagulant treatment before glaucoma surgery can only be made after having carefully assessed its benefits and risks together with all relevant health professionals (anaesthetist, cardiologist, general practitioner...), and after having explained them to the patient.

VI- REFERENCES:

1. Tuli SS, WuDunn D, Ciulla TA, Cantor LB. Delayed suprachoroidal hemorrhage after glaucoma filtration procedures. Ophthalmology 2001;108:1808-1811.
2. Cobb CJ, Chakrabarti S, Chadha V, Sanders R. The effect of aspirin and warfarin therapy in trabeculectomy. Eye (Lond) 2007;21:598-603.
3. Jeganathan VS, Ghosh S, Ruddle JB, Gupta V, Coote MA, Crowston JG. Risk factors for delayed suprachoroidal haemorrhage following glaucoma surgery. The British journal of ophthalmology 2008;92:1393-1396.
4. Law SK, Song BJ, Yu F, Kurbanyan K, Yang TA, Caprioli J. Hemorrhagic complications from glaucoma surgery in patients on anticoagulation therapy or antiplatelet therapy. Am J Ophthalmol 2008;145:736-746.

5. Alwitry A, King AJ, Vernon SA. Anticoagulation therapy in glaucoma surgery. Graefe's archive for clinical and experimental ophthalmology = Albrecht von Graefes Archiv fur klinische und experimentelle Ophthalmologie 2008;246:891-896.
6. Bonhomme F, Hafezi F, Boehlen F, Habre W. Management of antithrombotic therapies in patients scheduled for eye surgery. Eur J Anaesthesiol 2013;30:449-454.
7. Samama CM RJ, Renard G. Proposition de gestion des nouveaux anticoagulants oraux directs (AOD) en chirurgie ophtalmologique. online] 2014;2014.
8. Lip GY, Durrani OM, Roldan V, Lip PL, Marin F, Reuser TQ. Peri-operative management of ophthalmic patients taking antithrombotic therapy. International journal of clinical practice 2011;65:361-371.
9. Healey JS, Eikelboom J, Douketis J, et al. Periprocedural bleeding and thromboembolic events with dabigatran compared with warfarin: results from the Randomized Evaluation of Long-Term Anticoagulation Therapy (RE-LY) randomized trial. Circulation 2012;126:343-348.