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Massive spontaneous subconjunctival hemorrhage in a patient on therapeutic warfarin: A case report

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ABSTRACT

Purpose: To describe a case of massive spontaneous subconjunctival hemorrhage in a patient taking warfarin with a therapeutic international normalized ratio (INR).

Observations: Massive circumferential hemorrhagic chemosis, extensive periorbital and facial ecchymosis, and active arterial extravasation in the subconjunctiva which required cessation and reversal of anticoagulation. Findings gradually resolved over several months after discharge.

Conclusions and importance: While subconjunctival hemorrhage, even in anticoagulated patients, is usually benign, rare examples of severe presentations exist. We present, to our knowledge, the first documented case of a subconjunctival hemorrhage necessitating cessation and reversal of anticoagulation in the setting of a therapeutic INR.

1. Introduction

Subconjunctival hemorrhage (SCH) is a typically benign process characterized by acute, painless bleeding into the subconjunctival space.[1] It is a common ocular condition with risk factors that include hypertension, hyperlipidemia, diabetes mellitus, anticoagulation therapy, and increased age (particularly over 50-years old given the previously mentioned risk factors).[2] While often spontaneous, SCH can be caused by Valsalva maneuvers, ocular and orbital trauma, and potentially serious systemic causes of coagulopathy.[3] Warfarin, the most prescribed outpatient anticoagulant in North America, is a known cause of spontaneous SCH, with an incidence of 0.35–1.56%.[4,5]

While a supratherapeutic international normalized ratio (INR) has not been shown to increase the risk of SCH, patients on warfarin with SCH should have their INR and prothrombin time (PT) checked to evaluate systemic coagulation status.[1,5] Warfarin-associated SCH usually resolves spontaneously after 5–10 days and rarely requires more than supportive care.[5] Documented cases of severe warfarin-associated SCH requiring cessation of anticoagulation,[6] cessation and surgical evacuation,[7] or cessation and reversal of supratherapeutic anticoagulation are extremely rare in the literature.[8] Usually, SCH are self-limiting, not overly severe, and do not require intervention. Therefore, formalized guidelines for proper anticoagulation management in warfarin-associated SCH do not exist and clinical judgement usually dictates treatment strategy.

Herein, we present a case that, to our knowledge, is the only reported occurrence of a warfarin-associated SCH in which the severity of presentation necessitated inpatient admission with cessation and reversal of anticoagulation in the setting of a therapeutic INR. This uniquely severe presentation of a condition universally regarded as benign provides the opportunity to examine the current literature regarding warfarin-associated SCH and offer insights to management strategies.

2. Case report

An 86-year-old Caucasian male presented to our institution's Emergency Department (ED) in May 2020 with progressive swelling and bleeding of his right eye with visual obstruction. His medical history was significant for hypertension, grade III chronic kidney disease, and atrial fibrillation. His ocular history was significant for bilateral cataract extractions with PCIOL implantation in 2013 and bilateral YAG laser capsulotomies in 2013. His medications were significant for Aspirin-CaCO3 81–300 mg daily, metoprolol ER 50 mg daily, and warfarin 2.5 mg daily with two days of 3.75 mg dosing. The rest of his history was non-contributory.

One week prior to presentation, the patient noticed an initially small,

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Fig. 1A. Right eye, upper lid manually retracted superiorly. Active extravasation and massive hemorrhagic chemosis can be seen, with blood overflowing the lower lid and draining down the patient's face.

but slowly progressive, amount of blood overlying the sclera of his right eye. He eventually experienced slight obstruction of his vision from the blood as well as minor periorbital ecchymosis. Two days prior to presentation, the patient was diagnosed with a small SCH by an outside ophthalmologist and was instructed to discontinue his warfarin and was told to not worry about the bleeding. After two days of progressive bleeding, he presented to an outside hospital ED, where active subconjunctival bleeding and hemorrhagic chemosis were documented. Laboratory evaluation at that time showed an INR of 2.85 with a PT of 32.9. Due to this atypical presentation, the patient was referred to our institution for further management.

On presentation to our ED, the patient denied any pain, dizziness, blurry vision, or history of recent trauma to the eye or face. Of note, the patient was normotensive with a blood pressure of 120/81 mmHg. Best visual acuity sans correction was found to be 20/80 in the right eye and 20/40 in the left eye. Intraocular pressure and pupillary exam were both within normal limits. External examination revealed periorbital ecchymosis with trace edema, massive 360-degree hemorrhagic chemosis, and active bleeding from the subconjunctiva with overflow onto the patient's face (Fig. 1A, B). Extraocular movements in the right eye were restricted 50% in all quadrants, while there were no restrictions in the left eye. Slit lamp and fundus examinations revealed no further abnormalities.

Laboratory workup was significant for an INR of 2.7 (normal range of 0.9–1.1, and 2.0–3.0 with therapeutic anticoagulation), a PT of 32.9 s (normal range of 12.1–15.1 s), and an initial hemoglobin of 14.3 g/dL which decreased to 13.6 g/dL 4 h later. Due to the active nature of the bleeding, a CT-Angiogram of the head with/without contrast was ordered, which revealed a small preseptal hematoma anterior to the right globe with a focus of active arterial extravasation of unclear source. No vascular malformations or large lacerations corresponding to the area of bleeding were noted. After discussion with the patient's internal medicine team, the decision was made to reverse the warfarin with 2.5 mg of Vitamin K and 1 unit of fresh frozen plasma. At this point, copious erythromycin ointment and pressure patches were applied to the right eye.

Several hours after admission the source of bleeding was identified as a small artery in the superficial inferonasal bulbar conjunctiva near the medial canthus and finally controlled with application of focal pressure patches for 25 and then 15 minutes. No additional management was necessary for several hours until the patient snorted and began actively bleeding again. Focal pressure patches were again applied to the source, twice for 30 minutes each, with subsequent hemostasis. Although surgical management and cautery were discussed with the patient, due to the recurrent severe bleeding, the patient was hesitant to pursue surgical measures and ultimately elected to continue patching upon further bleeding.

Regular ophthalmic examinations continued for two more days, with no further bleeding or ophthalmic complications, at which point the patient was cleared by Ophthalmology for discharge. The patient was medically managed for several more days due to episodes of atrial fibrillation and was discharged from the hospital five days after admission. At his final follow-up appointment, 3 months post-discharge, the patient had no recurrence of bleeding or other related complications, except for a mild contact dermatitis from the initial choice of antibiotic ointment. The patient's SCH and periorbital ecchymosis completely resolved over the course of follow-up and corrected vision in the right eye improved to baseline acuity of 20/40.

Fig. 1B. Extensive periorbital ecchymosis can be appreciated with inferior extension to the right jaw.

3. Discussion

This case demonstrates an atypically massive spontaneous SCH in a patient on therapeutic warfarin. With no reported trauma, previous occurrence of similar bleeds, or known lesions near the site of the bleed, this presentation is disproportionately severe and markedly inconsistent in magnitude compared to the expectedly small SCH in patients taking warfarin.[4–6] While the exact cause of this patient's bleed may never be fully known, it is possible that the small bulbar vessel was initially damaged by a strong Valsalva maneuver since the patient denied any obvious trauma or eye rubbing. While the difference between therapeutic and supratherapeutic INR has not been shown to increase the risk of SCH in patients taking warfarin,[1,5] the impressive amount of hemorrhage was certainly more suggestive of a further hypocoagulable state than the therapeutic INR found on laboratory examination. The only other documented case of warfarin cessation and reversal due solely to an SCH was in a patient with a supratherapeutic INR, further highlighting the distinctiveness of this presentation.[8]

Due to the lack of formal guidelines on managing an SCH of such atypical severity, clinical judgement was the sole determinant of management course. Discontinuation and reversal of warfarin was deemed necessary in this case due to the severity of the bleeding and mass effect on surrounding tissues. Had the bleeding not been so robust as to threaten the patient's vision, it may have been possible to manage the bleeding while maintaining anticoagulation. Once the bleeding vessel was identified, cautery versus surgical repair of the vessel was strongly considered due to the quantity of hemorrhage and fear of further recurrence leading to blood loss or visual impairment. However, due to the patient's choice for non-surgical management, conservative therapy with focal tamponade was further trialed with clear success as described. While the viability of anticoagulation reversal and conservative management of such a severe SCH is supported by this particular case report, it should be recognized as preliminary at this time. It may serve as an initial data point for future practitioners when faced with an SCH of this magnitude in an anticoagulated patient.

4. Conclusions

This case report highlights that, while extremely rare, spontaneous SCH in patients anticoagulated with warfarin may present with severity

requiring focal tamponade, cessation and/or reversal of anticoagulation, or surgical management. To our knowledge, this is the first report to describe a warfarin-associated SCH of sufficient severity to require cessation and reversal of anticoagulation in a patient with a therapeutic INR. This report may also serve as a cautionary tale that even the most apparently benign condition, such as a SCH, can have atypical and severe presentations, and as such should not be dismissed without thorough examination or workup.

Patient consent

The patient provided both verbal and written consent for the use of his medical history and images to be written and submitted as a case report.

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Authorship

All authors attest that they meet the current ICMJE criteria.

Declaration of competing interest

None.

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