Spontaneous sub-conjunctival haemorrhage in patients using long-term topical corticosteroids

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Abstract

Purpose To investigate the observed high prevalence of spontaneous sub-conjunctival haemorrhage (SCH) in patients using long-term topical steroid treatment.

Patients and methods A cross sectional survey of the occurrence of SCH was carried out in 248 patients using steroid eye drops and in a comparison group of 113 patients using topical glaucoma medication.

Results Twenty-four patients with uveitis (10% of total) experienced single or recurrent SCH. Of these 71% used prednisolone acetate 1% (compared with 75% for those unaffected). None of 113 glaucoma patients were affected.

Conclusions The long-term use of topical steroid for chronic uveitis substantially increases the prevalence of spontaneous or minimal-trauma SCH. Steroid-induced vascular fragility is the likely cause.

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Introduction

Spontaneous sub-conjunctival haemorrhage (SCH) is usually an innocuous event, but may be associated with systemic hypertension, Valsalva manoeuvre, or non-ocular trauma, and therapy with certain antibiotics, anti-platelet, or anti-coagulant therapy. Its prevalence varies from 0.06 to 0.35% depending on the population studied.^{1,2} A high prevalence of single or recurrent SCH in patients with chronic uveitis using long-term

topical steroids was suspected, and therefore investigated.

Patients and methods

Information on the incidence of spontaneous SCH was collected from patients with chronic uveitis affecting the anterior segment, who had used topical steroids continuously for 2 years or more. The number of episodes of SCH was obtained by direct questioning and the type and duration of steroid used, was recorded. The use of anti-platelet or anti-coagulant medication was recorded. A comparison group of patients using long-term anti-glaucoma therapy was also analysed.

Results

A total of 248 patients with uveitis using long-term topical steroid, were included. Of these, 24 (9.7%) had reported SCH, of which 5 had been recurrent. The mean patient age was 57 years with a range from 32 to 66 years. One patient also used low-dose aspirin and three used low-dose oral prednisolone. All patients had been on topical steroid continuously for over 2 years: 17 (71%) used prednisolone acetate 1%, 4 (17%) used rimexolone 1%, and 3 (12%) used dexamethasone 0.1%. Comparison was made with the 224 patients using long-term topical steroid, but not developing SCH: 75% used prednisolone acetate 1, 9% rimexolone 1, 9% betamethasone 0.1, and 8% dexamethasone 0.1%.

A comparison group of 113 patients with chronic glaucoma (but not uveitis) using long-term (more than 2 years) prostaglandin analogue (72), beta-blocker (19) or both (22) was also analysed prospectively. None of these

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patients reported a spontaneous SCH over the previous 2 years.

Discussion

Spontaneous bruising in association with systemic steroid treatment is well reported, but is by no means the only reported bleeding complication of steroid treatment. Inhaled steroid treatment for chronic lung disease also leads to a high incidence of bruising.³ Intranasal topical steroid spray is associated with epistaxis in up to 23% of patients.⁴ Spontaneous haemorrhage from subarachnoid aneurysms is more likely with chronic steroid treatment.⁵

We have reported a substantial incidence (10%) of spontaneous SCH in our patients using long-term topical steroid, and in a few this has been recurrent and troublesome. The most commonly associated steroid (71%) is prednisolone acetate 1%, but this figure reflects current usage within our clinic, and we have no evidence that this steroid in particular is more likely to lead to SCH.

Long-term administration of topical steroid probably predisposes to SCH by increasing vascular fragility. Vascular wall integrity is largely dependant upon an extracellular matrix laid down by pericytes and smooth muscle cells. By regulating alpha-type I pro-collagen promoter activity, glucocorticoids decrease vessel wall collagen formation, and therefore, decrease vessel wall strength over time.⁶ Inflammatory changes related to the uveitic process may also alter vascular integrity, but this usually results in cytokine-induced increased permeability rather than actual loss of pericytes and structural weakening. We conclude that topical steroids induce physical changes to conjunctival blood vessel walls, predisposing either to spontaneous SCH or that induced by minimal trauma (such as eye-rubbing). In some patients this is frequent and problematic; the risk should be added to those already known for topical steroid usage, including glaucoma and cataract.

Summary

What was known before

- Glucocorticoids decrease vessel wall collagen formation, and therefore, decrease vessel wall strength over time.
- Spontaneous bruising in association with systemic steroid treatment is well reported.
- Inhaled steroid treatment for chronic lung disease leads to a high incidence of bruising.
- Intranasal topical steroid spray is associated with epistaxis in up to 23% of patients.

What this study adds

- Our study shows a substantial incidence (10%) of spontaneous SCH in our patients using long-term topical steroid.
- In a few patients this has been recurrent and troublesome.
- There are no formal reports or studies in the literature describing this incidence.

Conflict of interest

The authors declare no conflict of interest.

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