Ocular injury secondary to sheep bile exposure

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SUMMARY

A 57-year-old abattoir worker was seen at a general practitioner after sheep bile splashed into his left eye. Fluorescein examination revealed extensive ulceration involving at least two-thirds of the corneal surface. Copious irrigation with normal saline, application of chloramphenicol ointment and an eye patch resulted in excellent healing within 2 days with return to normal vision for the patient thereafter.

BACKGROUND

There are no published reports of corneal injury secondary to sheep bile exposure. The management principles for this injury are therefore generic. Previous reports have shown that early definitive management in other kinds of bile injury is important for a favourable final outcome. Experienced rural general practitioners have similarly managed cases of sheep bile injury to the eye despite the lack of published literature on it. This case report will contribute to the body of knowledge available regarding eye injury secondary to sheep bile exposure.

CASE PRESENTATION

A 57-year-old abattoir worker was seen at a general practitioner surgery complaining of pain, irritation and blurring of vision in the left eye.

He was cutting the gall bladder off a sheep's liver when bile accidentally splashed into his left eye.

Irrigation of the eye was started at the scene with tap water and he presented to the surgery about 3 h after the incident.

Eye irrigation was continued with normal saline for about 1 h.

The eye was then examined.

► Visual acuity left eye: 6/24

► Right eye: 6/18

There was no obvious limbal ischaemia.

Fluorescein dye with tetracaine local anaesthetic was applied to the affected eye and examined with a fluorescent blue lamp.

This revealed extensive ulceration over the left cornea covering at least three-quarters of the corneal surface in the affected eye and involving the visual axis (figure 1).

Chloramphenicol eye ointment was applied and an eye patch put in place.

He was discharged with chloramphenicol ointment to apply every 4 h, an eye patch for 1 day and a follow-up appointment arranged in 2 days' time with instructions to present to the emergency department in case he had increasing pain.

Specialist review was not sought at this stage for a number of reasons which include difficulties in getting afterhours specialist ophthalmology services

in country Australia, in addition to the fact that the corneal ulceration was superficial with no significant evidence of limbal ischaemia.

On review 2 days later, he reported better vision and very minimal discomfort.

On examination under fluorescein, the ulcer over the left cornea showed good healing (figure 2).

Visual acuity:

► Left eye 6/18

► Right eye: 6/18

He was subsequently discharged from follow-up.

TREATMENT

Copious eye irrigation on the scene coupled with normal saline irrigation for 1 h at the surgery then 4 hourly application of chloramphenicol eye ointment with an eye patch in situ.

OUTCOME AND FOLLOW-UP

Complete healing of the corneal ulcer.

DISCUSSION

Emergency room physicians and general practitioners are frequently faced with a wide variety of eye injuries.

The immediate and short-term management of these injuries can have a significant impact on the final outcome and morbidity.

Not much data exists regarding the management of eye injuries secondary to bile exposure, and to our knowledge, there is no data available on the management of eye injuries due to sheep bile exposure.

One of the few published studies on eye injuries due to bile exposure was by Christoffersen and Olsen.¹ They reported on the outcomes in 29 men who had corneal injuries sustained from exposure to fish bile.

Twenty-eight of the 29 men received immediate eye irrigation with water and sought medical help soon thereafter.

Medical intervention consisted of eye irrigation then discharge with chloramphenicol eye ointment, an eye patch and follow-up in a few days.

All had favourable outcomes other than one individual who presented 11 h postexposure and despite copious eye irrigation, ended up having permanent corneal scarring that eventually needed surgical intervention.

Vayalambone *et al*² also reported on a case of turkey bile eye injury. In this case, early irrigation with normal saline then treatment with chloramphenicol ointment, cyclopentolate 1% and an eye pad resulted in complete healing over the next 1 week.

The contents of bile that cause the corneal injuries observed in different studies was further investigated in the same article.

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Figure 1 Corneal ulceration at presentation.

They found that bile is majorly composed of 50% bile acids, 40% phospholipids and 10% cholesterol and bile pigments. It has a high content of organic solutes contained in micelles

Figure 2 Day 2 after treatment.

making it iso-osmotic with plasma. Matrix metalloproteinases which have a high collagenolytic activity have been identified in turkey bile³ and they are postulated to cause most of the corneal damage in combination with bile's chemical effect.

Species-specific differences in bile constitution are likely but the overall properties generally closely approximate that of human bile which has been best investigated.

From the cases reported thus far, it seems that provided the affected eye is immediately rinsed with copious amounts of water or normal saline followed by appropriate medical intervention, the outcomes are usually excellent.

This is the only case report on sheep bile eye injury to our knowledge. This report coupled with the literature review will hopefully provide emergency physicians and rural general practitioners attending to similar cases in the future with a reference point in the management of their patients.

Learning points

- ▶ The management of sheep bile eye injury may be the same as for any other chemical eye injury.
- ▶ Complete healing of corneal ulcers secondary to sheep bile injury is to be expected in cases where copious eye irrigation and medical attention is sought immediately.
- ▶ Sheep bile eye injury can be successfully managed in the primary care setting.

Competing interests None.

Patient consent Obtained.

REFERENCES

- 1 Christoffersen T, Olsen EG. Injury to the cornea due to fish bile. *Scand J Work Environ Health* 1993;19:358–9.
- 2 Vayalambone D, Butler T. Chemical-biological ocular injury from turkey bile. *Cutan Ocul Toxicol* 2011;30:241–2.
- 3 Rath NC, Huff WE, Huff GR, et al. Matrix metalloproteinase activities of turkey bile. *Comp Biochem Physiol C Toxicol Pharmacol* 2001;130:97–105.

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