Traumatic intralenticular abscess: a case series

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ABSTRACT

Purpose: To report the clinical presentation, management and outcome of eyes with traumatic intralenticular abscess.

Methods: In this interventional case series, records of eight patients (eight eyes) with intralenticular abscess developing following trauma were reviewed. All patients underwent extracapsular cataract extraction with intracameral antibiotics with or without pars plana vitrectomy. Main outcome measures studied were resolution of infection and final visual outcome.

Results: Lens abscess developed in six eyes following penetrating injury and in two eyes following intraocular penetration of caterpillar hair. Gram positive cocci were cultured from the lens aspirate in five eyes and Staphylococcus epidermidis was the most common organism isolated. Cataract extraction resulted in control of the infection in all eyes and seven eyes (87.5%) had a favourable visual outcome.

Conclusion: Early lens extraction with intracameral antibiotics in eyes with intralenticular abscess allows control of infection with good visual outcome.

Key words: cataract extraction, intralenticular abscess, trauma.

INTRODUCTION

Abscess of the crystalline lens is a rare condition that has been described after penetrating trauma, metastatic spread and intraocular surgery. Only a few single case reports of traumatic intralenticular abscess have been published1–6 and the predisposing factors, clinical features, treatment and visual outcome of this condition are not well described. We report eight cases of intralenticular lens abscess following trauma, their clinical presentation, response to treatment and visual outcome.

METHODS

Case records of eight patients (eight eyes) who presented to our hospital with abscess of the crystalline lens following trauma were retrospectively reviewed. The institutional ethics committee approved the study. Intralenticular lens abscess was defined as collection of yellow, pus-like inflammatory material within the lens capsule (Figs 1 and 2). Nature of trauma, duration of symptoms and the visual acuity at presentation were noted. All eyes had an evaluation of the posterior segment using ultrasound B scan. Following this, they underwent extracapsular cataract extraction through a 10 mm limbal wound that was sutured. Antibiotics (cefazolin 2.25 mg/0.1 mL and amikacin 0.4 mg/0.1 mL) were injected into the anterior chamber at the end of surgery and the lens aspirate was subjected to standard microbiological work up including Gram stain along with culture for aerobes, anaerobes and fungi. If there was vitreous infiltrate on B scan or if the abscess appeared to extend beyond the posterior capsule intraoperatively, a 3-port pars plana core vitrectomy was performed. No intraocular lens (IOL) was implanted at the time of surgery.

Six to eight weeks after surgery, secondary IOL implantation was done. The posterior chamber IOL was implanted over remnants of the capsule if available or fixed transsclerally. If the initial trauma produced a central corneal scar, penetrating keratoplasty was performed at the time of IOL implantation.

Main outcome measures studied were response of the infection to treatment and the final visual outcome.

RESULTS

Patient data, nature of trauma, clinical features, response to treatment, secondary interventions and visual outcome are
Mean follow up was 6.9 months (range 3–14 months).

In two patients, there was no obvious penetrating trauma and the infection was produced by caterpillar hair entering the eye. In six eyes, the infection appeared confined to anterior segment on ultrasound B scan (Fig. 3) but in two of these eyes, part of the abscess could be seen extending through the posterior capsule into the anterior vitreous (dumbbell abscess) during surgery.

Microbiological culture was positive in five eyes and Staphylococcus epidermidis was most common infecting organism (three eyes). Staphylococcus aureus was grown in the other two eyes. In three eyes, although the Gram stain revealed Gram positive cocci, no organism could be grown on culture.

Two eyes required penetrating keratoplasty at the time of secondary IOL implantation. Although the infection cleared described in the Table 1. In all eyes, visual outcome was poor in one eye due to phthisis (case 3).

**DISCUSSION**

Abscess of the crystalline lens has been described following penetrating trauma with wood, metal and with implantation of cilia. In our series, obvious penetrating trauma accounted for most cases (six eyes; 75%). In two eyes, however, infection was carried by caterpillar hair entering the anterior chamber through the cornea.

Abscess of the lens differs from infection elsewhere in the eye as the infective organisms are sequestered in an avascular, protein-rich environment which makes penetration of antibiotics difficult. We believe that the best treatment is to ‘drain the abscess’ by performing lens extraction at the earliest. This not only allows removal of most of the infecting organisms but also permits intracameral antibiotics to reach the bacteria. We did not implant an IOL at the time of lens extraction to prevent possible adherence of the microbes on the lens surface or at a nidus such as a haptic-optic junction.

Organisms could be grown on culture in five eyes (62.5%) in our series and all were Gram-positive cocci. Other authors have grown Propionibacterium acnes, Stenotrophomonas maltophila, S. epidermidis and Paecilomyces lilacinus from lens abscess following trauma.

We found a final visual acuity of 6/18 or better in six eyes (75%) and 6/60 in one eye (12.5%). This outcome is more favourable than that seen following traumatic endophthalmitis. This suggests that most of the infection in cases of intralenticular abscess remains confined to the capsular bag, despite presence of vitreous cells on ultrasound B scan. In the remaining eye with poor outcome, the patient presented late with a large lens abscess, dense vitreous infiltration and a secondary glaucoma. Although the eye became quiet after surgery, it was ultimately lost to phthisis.
Table 1. Demographic and clinical features, treatment received, organism grown and visual outcome in patients with traumatic intralenticular abscess

<table>
<thead>
<tr>
<th>No.</th>
<th>Age/sex</th>
<th>Mode of injury</th>
<th>Time interval (days)</th>
<th>Initial visual acuity</th>
<th>Clinical features</th>
<th>Ultra-sound B scan</th>
<th>Treatment</th>
<th>Organism grown</th>
<th>Course and secondary intervention</th>
<th>Final visual acuity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>60/M</td>
<td>Stick</td>
<td>7</td>
<td>10/200</td>
<td>Corneal entry wound, hypopyon, lens abscess</td>
<td>Vitreous clear</td>
<td>ECCE + intracameral antibiotics</td>
<td>Staphylococcus aureus</td>
<td>Infection cleared, PKP + IOL</td>
<td>6/18</td>
</tr>
<tr>
<td>2</td>
<td>41/M</td>
<td>Thorn</td>
<td>4</td>
<td>20/200</td>
<td>Corneal entry wound, hypopyon, lens abscess</td>
<td>Vitreous clear</td>
<td>ECCE + intracameral antibiotics</td>
<td>Staphylococcus epidermidis</td>
<td>Infection cleared, secondary IOL</td>
<td>6/9</td>
</tr>
<tr>
<td>3</td>
<td>47/M</td>
<td>Thorn</td>
<td>30</td>
<td>PL</td>
<td>Corneal entry wound, secondary glaucoma, hypopyon, lens abscess</td>
<td>Vitreous cells</td>
<td>ECCE + PPV + intracameral antibiotics</td>
<td>Nil</td>
<td>Infection cleared, phthisis</td>
<td>PL</td>
</tr>
<tr>
<td>4</td>
<td>22/M</td>
<td>Caterpillar hair</td>
<td>8</td>
<td>20/200</td>
<td>Corneal caterpillar hair, lens abscess (dumbbell abscess)</td>
<td>Vitreous clear</td>
<td>ECCE + PPV + intracameral antibiotics</td>
<td>S. epidermidis</td>
<td>Infection cleared, secondary IOL</td>
<td>6/9</td>
</tr>
<tr>
<td>5</td>
<td>30/F</td>
<td>Stick</td>
<td>11</td>
<td>10/200</td>
<td>Corneal entry wound, hypopyon, lens abscess</td>
<td>Vitreous cells</td>
<td>ECCE + PPV + intracameral antibiotics</td>
<td>Nil</td>
<td>Infection cleared, secondary IOL</td>
<td>6/18</td>
</tr>
<tr>
<td>6</td>
<td>18/M</td>
<td>Thorn</td>
<td>30</td>
<td>PL</td>
<td>Corneal entry wound, hypopyon, lens abscess (dumbbell abscess)</td>
<td>Vitreous clear</td>
<td>ECCE + PPV + intracameral antibiotics</td>
<td>S. aureus</td>
<td>Infection cleared, PKP + IOL</td>
<td>6/60</td>
</tr>
<tr>
<td>7</td>
<td>22/F</td>
<td>Needle</td>
<td>6</td>
<td>20/200</td>
<td>Corneal entry wound, hypopyon, lens abscess</td>
<td>Vitreous clear</td>
<td>ECCE + intracameral antibiotics</td>
<td>Nil</td>
<td>Infection cleared, secondary IOL</td>
<td>6/9</td>
</tr>
<tr>
<td>8</td>
<td>36/M</td>
<td>Caterpillar hair</td>
<td>13</td>
<td>20/120</td>
<td>Corneal caterpillar hair, lens abscess</td>
<td>Vitreous clear</td>
<td>ECCE + intracameral antibiotics</td>
<td>S. epidermidis</td>
<td>Infection cleared, secondary IOL</td>
<td>6/6</td>
</tr>
</tbody>
</table>

dumbbell abscess, part of the abscess extended beyond the posterior capsule; ECCE, extracapsular cataract extraction; F, female; IOL, intraocular lens; M, Male; PKP, penetrating keratoplasty; PPV, pars plana vitrectomy.
In conclusion, intralenticular abscess can occur following a variety of ocular trauma. Early lens extraction with intracameral antibiotics allows control of infection with a good visual outcome.

REFERENCES