Despite increases in dose administered, the subconjunctival injection does not achieve aqueous humour antibiotic levels comparable to the intracameral injection

by Susanne Gardner D Pharm

INTRACAMERAL CEFUROXIME

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Mean AH antibiotic levels (μg/ml) after various routes of administration

<table>
<thead>
<tr>
<th>Antibiotic</th>
<th>Topical drops</th>
<th>Subconjunctival injection</th>
<th>Intracameral injection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cefuroxime</td>
<td>25mg (150mg/ml)</td>
<td>25mg</td>
<td>1 mg</td>
</tr>
<tr>
<td>Moxifloxacin</td>
<td>0.18-2.16 μg/ml</td>
<td>2.31-5.65 μg/ml</td>
<td>3.03 μg/ml</td>
</tr>
<tr>
<td>Vancomycin</td>
<td>50 μg/ml</td>
<td>20 μg/ml</td>
<td>24.8 μg/ml</td>
</tr>
</tbody>
</table>

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Mean AH antibiotic levels (μg/ml) after various routes of administration

(a) Adapted from reference 3. (b) Ref. 3: AH sampling times (12-24 minutes) - (120-160 minutes) after dose. (c) Ref. 3: AH sample at 12-24 minutes after dose. (d) Ref. 5: following Q2h topical drop dosing. (e) Ref. 4. Mean peak level measured at one hour post-dose. (f) Ref. 1. Two drops (one each about 25 and 30' before surgery). (g) Ref. 6: Measured at five hours post-dose. (h) Approximate AH concentration, extrapolated from intracameral 1mg dose, using anterior chamber volume of 0.3 ml intracameral cefuroxime at the end of cataract surgery.4 It is important to recall that any discussion of measured ocular antibiotic levels implies correlation with bacterial MICs and anticipated bactericidal effects over time. These “drug-bug” interactions vary considerably with bacterial strain and antibiotic. However, because the eye does not lend itself to multiple intraocular entries, and corneal layers are an intended barrier to the environment, we strive to deliver the highest, safe, single antibiotic dose whenever possible, so that meaningful intraocular antibiotic levels are sustained for as long a period of time as possible. To date, the intracameral injection remains the method of drug delivery that best accomplishes this goal.

References