Critically Appraised Topic

Prophylactic oral antibiotics for low-risk dog bite wounds

Name author: xxxxx

Clinical scenario
A young woman has been bitten by a dog three hours ago. She has puncture wounds and a small laceration on her forearm. Is their evidence for the prescription of prophylactic antibiotics?

Clinical question/ PICO
In adults with dog bite wounds, do prophylactic antibiotics reduce the incidence of wound infection?

P = adults with recent, uncomplicated, dog bite wounds
I= antibiotics
C= placebo
O = incidence of wound infection

The preferred study type: randomized controlled trials (RCTs) or Systematic Reviews of RCTs

Search strategy
PubMed:
PubMed result: 352 papers, of which 10 systematic reviews and 8 randomized trials (search date March 1 2012)

Cochrane Library:
dog* bite* antibiotic* (ti,ab,kw)
Cochrane result: 1 Cochrane Review and 9 trials (search date March 1 2012)

Search outcome
From the 10 systematic reviews (and one duplicate), the Cochrane Review was included. Out of 17 trials, 7 were duplicates; 4 RCTs were included in the Cochrane Review; 5 trials were irrelevant or not adequate (not randomized). One remaining, recent, RCT and cost-effectiveness study was included for critical appraisal.

Results
Key results of the Cochrane systematic review and RCT are summarized in the evidence table below
<table>
<thead>
<tr>
<th>Study</th>
<th>Patient group and intervention</th>
<th>Study type</th>
<th>Outcome</th>
<th>Key results</th>
<th>Study weaknesses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medeiros H.S. 2001</td>
<td>463 dog bite patients (6 RCTs)</td>
<td>Cochrane Syst Review</td>
<td>Incidence of infection</td>
<td>Infection rate in treatment group: 4% (10/225)</td>
<td>Small sample sizes. 1/6 study was quasi-randomized; 5/6 studies not clear about allocation concealment</td>
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<td></td>
<td>Treatment vs control:</td>
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<td></td>
<td>Control group: 5.5% (13/238)</td>
<td>Differences in antibiotic type and regimen; one study is not placebo-controlled</td>
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<td></td>
<td>- Phenoxymethyl penicillin 5 days + wound care vs local wound care only</td>
<td>Level 1a</td>
<td></td>
<td>Odds Ratio 0.74 95% C.I. [0.30, 1.85]</td>
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<td></td>
<td>- Dicloxacillin or cephalaxin or erythromycin 7 days vs placebo</td>
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<td>- Oxacillin 5 days vs placebo</td>
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<td>- Cotrimoxazole vs placebo</td>
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<td>- Cloxacillin or dicloxacin vs placebo</td>
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<td>- Phenoxymethyl penicillin 2 days vs placebo</td>
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<td>Quinn 2010</td>
<td>94 dog bite patients.</td>
<td>RCT + cost effectiveness</td>
<td>Incidence of infection</td>
<td>Infection rate in treatment group: 0% (0/48)</td>
<td>Small sample; 29% of eligible patients refused to participate</td>
</tr>
<tr>
<td></td>
<td>Treatment vs control was</td>
<td>Level 1b</td>
<td></td>
<td>Control group: 4% (2/46)</td>
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<tr>
<td></td>
<td>3 day prophylactic amoxicillin-calvulanic acid vs placebo</td>
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<td>ARR (abs risk red)</td>
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<td>4% (95% C.I. -1 to 4.5%)</td>
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</tbody>
</table>

**Comments**

The overall infection rate for dog bites in all included studies was 4.5% whether or not antibiotics were prescribed. According to the cost model of Quinn prophylactic antibiotics are cost effective if the risk of wound infection is greater than 5% and if antibiotics decrease that risk by greater than 3%. And it is never cost effective to treat wounds with an infection rate of less than 3%. Antibiotics may be (cost-) effective for high-risk dog bites with a high risk of wound infection.

**Clinical bottom line**

There is no evidence for the effectiveness of prophylactic antibiotics for uncomplicated dog bites.

**References**
