The effect of Ophthalmic Patch on Conjunctiva of Neonates under Phototherapy

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Abstract

Objective
Conjunctivitis is a common disease in neonates. Several bacterial and viral infectious agents may cause it. Tear circulation and blinking have protective effects from bacterial colonization in the conjunctival sac. Reduced blinking increases the possibility of bacterial conjunctivitis. We studied the effect of eye patches on bacterial colonization of the conjunctival sac.

Methods
In 100 icteric neonates who needed phototherapy and occlusive patches for their eyes during the procedure we did conjunctival bacterial culture before and after 48 hrs after occlusive patches. The results of two cultures were analyzed with statistical tests, McNemar, chi-square, and binominal with SPSS V18 software.

Results
In 100 neonates there were 51 (51%) males 49 (49%) females. The mean birth weight was 2578 ±736 g. Culture before ophthalmic patches showed 20 (20%) cases with positive conjunctival cultures and 76 cases (76%) with positive culture 48 hrs after use of eye patches.

Conclusion
Eye patches during phototherapy increase bacterial colonization in the conjunctival sac. We must be aware of this complication during phototherapy.

Keywords
neonate- eye patches- phototherapy- conjunctivitis

Introduction
Conjunctivitis occurs in 1-12% of neonates. Some bacterial agents for this etiology are atypical hemophilus influenza, streptococcus pneumonia, mycoplasma, neisseria gonorrhea, pseudomonas aeruginosa, staphylococcus aureus and staphylococcus epidermidis.¹,² Some predisposing factors for bacterial conjunctivitis are eye patches³, decreased blinking and ophthalmic excoriation.⁴, ⁵ We see conjunctivitis as a complication of phototherapy in neonatal intensive care units after use of eye patches for these neonates. Conjunctivitis is not a serious problem in neonates and this infection is treated with local antibiotics effectively, but sometimes it has complications like corneal scar, perforation and blindness. So we studied the effect of eye patches on bacterial culture before eye patches and 48 hrs after.

Methods
In this prospective cross sectional study assessed 100 icteric neonates admitted to our center from October 2009 to March 2010. In these patients conjunctival smear and culture was done before admission. Conjunctival smear and culture was done before admission. Conjunctival smear and culture was done before admission. Conjunctival smear and culture was done before admission.
Table 1. First Culture Results (n=20)

<table>
<thead>
<tr>
<th>Bacteria</th>
<th>First culture</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>frequency</strong></td>
<td><strong>percent</strong></td>
</tr>
<tr>
<td><strong>negative</strong></td>
<td>18</td>
</tr>
<tr>
<td><strong>positive</strong></td>
<td>2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>20</td>
</tr>
</tbody>
</table>

Table 2. Second culture

<table>
<thead>
<tr>
<th>Bacteria</th>
<th>Second culture</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>frequency</strong></td>
<td><strong>percent</strong></td>
</tr>
<tr>
<td><strong>negative</strong></td>
<td>54</td>
</tr>
<tr>
<td><strong>positive</strong></td>
<td>4</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>6</td>
</tr>
</tbody>
</table>

Table 3. Comparison of Two Cultures Results (n=76)

<table>
<thead>
<tr>
<th>Bacteria</th>
<th>First culture</th>
<th>Second culture</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>frequency</strong></td>
<td><strong>percent</strong></td>
<td><strong>frequency</strong></td>
</tr>
<tr>
<td><strong>negative</strong></td>
<td>24</td>
<td>24</td>
</tr>
<tr>
<td><strong>positive</strong></td>
<td>76</td>
<td>100.0%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>100</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

McNemar Test
were performed using SPSS V18 software.

Results
100 Icteric neonates with eye patches during phototherapy were studied. Neonates who had conjunctivitis clinically were excluded; 51 neonates (51%) were male and 49 neonates (49%) were female. Postnatal age was 2.9 ± 2 days. Mean birth weight was 2578±735 g; 36% had normal vaginal delivery and 64% had cesarean section. First eye culture at admission was positive in 20 cases (20%) were seen (staphylococcus epidermidis in 18 cases and citrobacter in 2 cases). Second eye culture after 48 hrs of use eye patches was positive in 76 cases (76% positive).

Discussion
Fok in 1995 studied 204 neonates (102 with eye patches and 102 with head box) for eye surveillance. In group A, 33 neonates had positive conjunctival culture and in group B, 14 neonates had positive culture. So recommended other forms of eye surveillance during phototherapy.(2) Emami et al studied 200 icteric neonates; there was no effect of Erythromycin prophylaxis for conjunctivitis during eye patches use upon phototherapy.(4) Haghbini et al studied 230 neonates with conjunctivitis; the most common pathogen was staph coagulase positive and other organisms were streptococcus, staph coagulase negative, hemophilus influenza, klebsiella, E coli, pseudomonas and Chlamydia.(6) Shirvani et al had 51% staph aureus and staph epidermidis 38.6% in conjunctival culture of neonates with conjunctivitis.(7)

Conclusion
Eye patches during conventional phototherapy increase the positivity of conjunctival culture after 48 hrs. We must seek other ways for ophthalmic surveillance during phototherapy.

Acknowledgment
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References
7. Shirvani F, Sharifi M. the survey of conjunctivitis in neonates at Boooli hospital , journal of Iran medical science university , 10(96) ,1999 , P 230-231.