

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 has 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 gonorrhoea, pseudomonas aeruginosa, staphylococcus aureus and staphylococcus epidermidis.^(1,2) Some predisposing factors for bacterial conjunctivitis are eye patches⁽³⁾, 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 at admission neonates without conjunctivitis clinically and then repeated smear and culture 48hrs after starting eye patches. Gram negative bacterial growth in EMB agar culture media, Gram positive bacterial growth in blood agar media after defining the type of bacteria was assessed; descriptive statistics and analytical tests (Pearson chi-square, binominal test, and McNamara test)

Table1. First Culture Results:(n=20)

positive		First culture	
percent	frequency	bacteria	
90.0	18	Staphylococcus epidermidis (coagulase negative)	
10.0	2	citrobacter diversus	
0.0	0	klebsiella	
0.0	0	Staphylococcus aureus (coagulase positive)	
0.0	0	Streptococcus group A	
0.0	0	Escherichia coli(E coli)	
0.0	0	Enterococcus	

Table2. Second culture

Binomial Test (for P=0.0) P-Value	positive		Second culture	
	percent	frequency	bacteria	
0.0001**	71.0	54	Staphylococcus epidermidis (coagulase negative)	
0.001**	5.3%	4	Citrobacter diversus	
0.0001**	9.2%	7	klebsiella	
0.0001**	7.9%	6	Staphylococcus aureus(coagulase positive)	
0.001**	5.3%	4	Streptococcus group A	
0.003**	2.6%	2	E coli	
0.003**	2.6%	2	Enterococcus	

Table3. comparison of two cultures Results:(n=76)

Total		positive		negative		First culture
percent	frequency	percent	frequency	percent	frequency	Second culture
24.0%	24	.0%	0	30.0%	24	negative
76.0%	76	100.0%	20	70.0%	56	positive
100.0%	100	100.0%	20	100.0%	80	Total

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⁾ Haghbin 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.

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