



Document Title	Protocol of Topical Polyhexamethylene Biguanide 0.02% (PHMB) for Acanthamoeba Keratitis	
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Acronyms

AK	Acanthamoeba Keratitis
PHMB	Polyhexamethylene biguanide

Definitions

- Keratitis: inflammation of the cornea , can be infectious or non-infection.
- Acanthameoba Microscopic free-living ameba, also known as an amoeba (single-celled living organism).

Protocol of Topical Polyhexamethylene Biguanide 0.02%

(PHMB) for Acanthamoeba Keratitis

Introduction

Acanthamoeba is an amoeba, a microorganism found in soil and water worldwide. can severely infect the skin, eyes, and central nervous system. Wearing contact lenses can allow the amoeba to enter the eyes. Acanthamoeba Keratitis is fatal parasite infection that primarily affects people who wear contact lenses. It is frequently characterized by late clinical development of a ring-shaped infiltration of stroma and pain that is out of proportion to findings. It is challenging to diagnose as well as to treat. Topical neomycin sulfate, other imidazoles, propamidine isethionate (Brolene) 0.1%, and polyhexamethylene biguanide eye drops—a member of the biguanide family—are among the recommended courses of treatment. Polyhexamethylene biguanide hydrochloride (Polyhexanide, PHMB) is a broad-spectrum antiseptic with low risk profile and outstanding tolerance. The physicochemical activity of this substance on the phospholipid membrane and DNA replication or repair mechanisms hinders or stops the bacterial strains from becoming resistant. PHMB demonstrated its efficacy against a wide range of species, including fungi, viruses, and both Gram-positive and Gram-negative bacteria.

The first-line treatment for Acanthamoeba keratitis is frequently the administration of 0.02% (200 µg/ml) PHMB. However, the effectiveness of 0.02% PHMB in Acanthamoeba keratitis has been studied only in one close-out randomized controlled research to date.

Furthermore, PHMB 0.02% is effective, safe and is easy to use. One drops into the affected eye(s) every 1 hour. Then depending on the clinical response- tapering will be adjusted. Often acanthamoeba keratitis requires long term therapy for full recovery.

At Al-Nahdha PHMB is not available, at present the only treatment used is chlorhexidine 0.02%- can be prepared for ocular use by clinical pharmacists. This medication works in combination with other medications for better effective management and response. Multi-therapy helps in preventing the devastating complications like corneal melting and perforation that lead to therapeutic corneal transplant, which it self is very costly and requires lengthy management and follow up. In addition, chlorhexidine is toxic to the

ocular surface. In the UK, PHMB is marketed under the name Cosmocil. A compounding pharmacy in the United States can make it from the swimming pool disinfectant Baquacil.

Aim and Objectives:

To develop guidelines in the effective management of acanthamoeba keratitis, and prevent its possible complications in patients at Al Nahdha Hospital.

Method and Procedure:

1. When to consider PHMB (0.02%)
 - 1.1. In cases presented with clinical suspicious of acanthamoeba keratitis
 - 1.2. In cases confirmed by conceal scrapping culture and sensitivity for the presence of A. castellanii and A polyphaga Protozoa.
2. Who can instill the eye PHMB 0.02%
 - 2.1. The patient him/herself, caregivers, allied health staff
3. Dosage:

One drop or two drops into the affected eye(s) every 1 hour initially. Then the frequency will be tapered down.

No dilution is needed.
4. Monitoring:

depending on the clinical response- which may take 2 weeks- the frequency can be reduced to every 3 hours for 3-4 weeks. Some even advocate to 6-12 months of treatment. Close observation is required when the treatment is discontinued to rule out recurrence. Please see **figure 1**.

Requirements:

- PHMB 0.02% eye drop is not available at Al-Nahdha Hospital. It is expected that with the start of using PHMB 0.02% with other anti-amoebic agents, the hospital stay for treating acanthamoeba keratitis will be reduced along with the complications and their expenses.
- No additional human/non-human resources are needed.
- See the flow-chart above on how PHMB 0.02% is going to be used.

Document History and Version Control

Version	Description	Review Date
1	Initial Release	

References

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Figure 1

