INTRODUCTION

Contact lens (CL) cases become contaminated with microbes during use [1,2]. Microbial contamination of CL cases may result in biofilm formation [3]. Bacteria within a biofilm are less susceptible to antimicrobials and multipurpose contact lens disinfection solutions [4]. The biofilm can then serve as a source of bacteria to contaminate contact lenses during storage [5].

AIM

To evaluate bacterial transmission from biofilms in contact lens storage cases to contact lenses during storage and disinfection.

METHODS

• A contact lens disinfection solution containing Povidone-Iodine (PI) (Cleadew, Ophtecs Corporation, Japan) was used.
• Biofilms of Pseudomonas aeruginosa 071 or Staphylococcus aureus 031 were grown in lens cases for 24 hours.
• Etafilcon A or senofilcon A contact lenses were placed in biofilm laden lens storage cases and either:
  1. Disinfected with solution for 4 hours, or
  2. Stored in rinsing solution for 4 hours, or
  3. Stored in saline solution for 4 hours.
• The number of bacteria in lens storage cases and contact lenses were then estimated by culture.

RESULTS

- There was a significant reduction in P. aeruginosa (-3.5 log10 CFU; p<0.01) and S. aureus (-2.9 log10 CFU; p<0.01) biofilms following 4 hours disinfection with Cleadew (Figure 1).
- There was no difference in bacterial transmission to the 2 lens materials (Figure 2). 26% of P. aeruginosa and 13% of S. aureus were transferred to contact lenses from disinfected storage cases.
- Contact lenses from disinfected storage cases had significantly lower numbers of P. aeruginosa (-2.0 log10 CFU, p<0.01) and S. aureus (-1.0 log10 CFU, p<0.01) compared to lenses from storage cases filled with only rinsing solution.

CONCLUSION

Cleadew contact lens disinfecting solution containing povidone-iodine is very effective at reducing bacterial biofilm in lens cases. Bacterial transmission to contact lenses can also be reduced by proper disinfection of contact lens storage cases.

REFERENCES


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