Strongly acidic electrolyzed water: valuable disinfectant of endoscopes

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Abstract

Background: Glutaraldehyde (GA) is currently considered to be the best disinfectant for endoscope disinfection. However, GA poses high risks for medical staff involved in the process and also to the environment. Strongly acidic electrolyzed water (SAEW) has been recently re-evaluated for its potent bactericidal effect and environmental safety.

Methods: Through the aspiration channel of the scopes, upper GI endoscopes and colonoscopes were experimentally contaminated with Pseudomonas aeruginosa, Mycobacterium avium and hepatitis B surface antigen positive blood. Four disinfection methods were tested: manual washing only, soaking in 3% GA for 5 and 10 min, and a 10-s soak in SAEW with 50 or 100 mL of aspiration.

Results: Direct plating culture was positive for Pseudomononas contamination after manual washing only (1/5) and after a 5-min soak in 3% GA. Complete disinfection, confirmed by enrichment culture and polymerase chain reaction (PCR) of Pseudomonass and hepatitis B surface antigen positive blood on the contaminated upper GI endoscope was obtained after a 10-min soak in GA and after using SAEW (0/5). Mycobacterium aviumare rather resistant against SAEW as determined by broth culture and PCR (1/5).

Conclusion: Strongly acidic electrolyzed water is a valuable disinfectant for endoscopes.

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