
ABSTRACT

PURPOSE:

Electrolyzed strong acid water (ESAW) is generated by the electrolysis of a weak sodium chloride solution. Although ESAW is known to have a strong bactericidal activity and to be harmless to the living body, its effectiveness and safety in the treatment of perforated peritonitis has not been well established.

METHODS:

Male Wistar rats were used for the study. Three hours after cecal ligation and puncture, the cecum was resected and the peritoneal cavity was irrigated with 50 ml of saline (Group S, n=12) or ESAW (Group E, n=14). The 5-day survival rate was compared between the two groups. In another pair of animals (n=10 each), bacteria in the ascitic fluid were counted at 6 and 18 h after irrigation.

RESULTS:

No adverse effects of ESAW were observed in the experimental group. The 5-day survival rate was 25% (3/12) and 85.7% (12/14) in Groups S and E, respectively (P < 0.01). The bacterial count at 18 h after the irrigation in Groups S and E was (5.0 +/- 2.5) x 10(5)/ml and (2.2 +/- 2.0) x 10(4)/ml, respectively (P < 0.0001).

CONCLUSION:

Peritoneal lavage with ESAW had no adverse effect, and achieved more effective decontamination than saline for perforated peritonitis. Therefore, the results of this study are considered to warrant and support the clinical application of ESAW.