

ABSTRACT

EFFECT OF LOW VOLTAGE ELECTRIC CURRENTS IN THE DECREASE OF *KLEBSIELLA PNEUMONIAE* ESBL AND NON ESBL COLONY

Abstract

Backgrounds and objectives. *Klebsiella pneumoniae* is a Gram negative bacteria and one of the most common causes of nosocomial infections, especially in patients in intensive care unit. Today, the use of liberal and irrational antibiotics is shows the emergence of antibiotic-resistant *K. pneumoniae*. This research was conducted to evaluate if low voltage electric current on three kinds of solvent media could have eradication effect.

Research Methods. This is an experimental study, which was done at Microbiology Laboratory of Harapan Kita Women and Children Hospital-Jakarta. This experiment used non-ESBL and ESBL *Klebsiella pneumoniae*, thereupon will be dissolved in saline, Aqua destillata, and Ringer Lactate, each consisting of 8 samples. Each sample reviewed a 0.5V and 10mA DC electric current; reduction of colonies were observed at 30,60,120 and 240 minutes using DensiCHEK.

Results and Discussions. There was a decrease in the colonies number of 2 bacterial groups in the first 30 minutes in all three media ($p < 0.01$). The reduction was higher in the non-ESBL *K. pneumoniae* group. The decrease of bacterial colonies was higher in the *K. pneumoniae* group non ESBL in ringer lactate medium during 240 minutes observation compared to saline and Aqua destillata ($p < 0.001$; $p < 0.001$, respectively). Saline solution showed no different effect compared to aquadestillata

Conclusions The use of 10 mA and 0.5 V electric currents without antibiotics reduce the number of non-ESBL and ESBL *K. pneumoniae* colonies within the first 30 minutes. The effect of electric current is greater in non-ESBL *K. pneumoniae*. Ringer lactate seems to be the medium with the highest bacterial reduction effect.

Key words: Klebsiella pneumoniae; nosocomial infection; bioelectric effect