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1036. Comparison of the hemodynamic parameters of two external chest compression devices (LUCAS versus AUTOPULSE) in a swine model of ventricular fibrillation

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Introduction

Given the difficulty of performing efficient CPR compressions, technology has turned to automaticity. LUCAS device has a pneumatically driven piston to compress the heart and uses active decompression suction on the upstroke. AUTOPULSE is a load distributing band compressor, that is mechanically actuated and battery driven. It provides both direct compression and semi-circumferential thoracic compression.

Objectives

To compare 2 different external chest compression devices (LUCAS and AUTOPULSE) regarding the hemodynamic effects during cardiorespiratory resuscitation.

Methods

Forty (40) pigs were randomly allocated into 2 groups. Group L (LUCAS), n=20 and Group A (AUTOPULSE), n=20. After anesthesia ventricular fibrillation was induced. Five minutes post cardiac arrest without treatment, resuscitation was initiated. Electrocardiography, intra-arterial pressure (carotid artery) and Swan-Ganz catheter were used to monitor central venous pressure, cardiac output, cardiac index, systemic vascular resistance and pulmonary vascular resistance prior to ventricular fibrillation and during resuscitation in both groups.

Results

The hemodynamic parameters demonstrated that there is no statistical difference in mean arterial pressure between the 2 devices but there was statistically significant difference ($P < 0.05$) in the cardiac output with LUCAS generating higher values than AUTOPULSE.

Conclusions

The mean arterial pressure that is produced by the 2 devices is similar, while the cardiac output produced by LUCAS is higher than AUTOPULSE.

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