INTRODUCTION

Performing high quality chest compressions consistently during OHCA is very challenging. For this reason mechanical chest compression devices are now on the rise in out of hospital cardiac arrest (OHCA). The data is conflicting among several studies whether or not mechanical chest compression devices improve outcome in adults with OHCA.

Because so many variables exist when evaluating outcomes of OHCA, forming conclusions about best practices is a difficult task. Early and effective CPR, pre-existing conditions, time to resuscitation, early defibrillation, pre-existing care and post care procedures all play an integral part in morbidity and mortality. The effectiveness of manual chest compressions (M-CPR) vs. mechanical chest compressions (IA-CPR) is examined here.

METHODS

Objective: To determine whether use of mechanical vs. manual chest compressions results in outcomes (e.g. return of spontaneous circulation (ROSC), neurologic outcome, survival) that are significantly increased or decreased in adults that experienced OHCA.

RESULTS

Study 1: The IA-CPR study arm showed a numeric decrease in sustained ROSC, 24 hour survival, survival to hospital discharge, and favorable neurologic outcomes. Covariate adjusted odds ratio (OR) for survival to hospital discharge was 0.89 (0.72-1.10) and interim analysis adjusted OR for survival to hospital discharge was 1.06(0.83-1.37).

Study 2: A difference did not exist in the primary endpoint of survival to 4 hours between the M-CPR and LDB-CPR overall (N=1071; 29.5%; 28.5%; P=.06, adjusted for covariates and clustering). A cerebral performance category of 1 or 2 at hospital discharge was recorded in 7.5% of patients in the M-CPR group and in 3.1% of the LDB-CPR group (P=.006).

CONCLUSIONS

• Study 1 showed numeric decreases in sustained ROSC, 24 hour survival, survival to hospital discharge, and favorable neurologic outcomes for mechanical CPR. Adjusted odds ratio of 1.06 indicates no statistically significant difference.
• The lack of P-values for outcomes measured in Study 1 makes it difficult to determine statistical significance.
• Study 2 showed numeric increase in 4 hour survival, but a numeric decrease in survival to hospital discharge and favorable neurologic outcomes for mechanical CPR.
• In Study 2, for both primary and secondary endpoints, P values were “generally adjusted” and, for the primary endpoint, it was .05.
• Study 2 had a majority of large p-values over .05, meaning the data does not support rejection of the null hypothesis.

REFERENCES


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Manual vs. Mechanical Chest Compressions in Out-of-Hospital Cardiac Arrest

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