

MEETING ABSTRACT

Open Access

# Ultrasound guided chest compressions during cardiopulmonary resuscitation

P Benato, M Zanatta\*, V Cianci

From 10th WINFOCUS World Congress on Ultrasound in Emergency and Critical Care Kuala Lumpur, Malaysia. 16-19 November 2014

## Background

Early and effective chest compressions have a well known pivot role in cardiopulmonary resuscitation (CPR) and 2010 International Consensus on Cardiopulmonary Resuscitation have strongly reinforced its importance.

The efficacy of chest compressions depends on hands position and on compression technique.

Medical education can improve chest compression technique, while the choice of thoracic landmark is always blind even if 2010 consensus indicated that it is reasonable to place the hands in the lower half of the sternum.

## Objective

Critical care ultrasound (CCUS) has changed the approach of critical ill patient and can identify potential reversible causes of cardiac arrest during CPR.

Our challenge is to use CCUS to locate the most appropriate site for chest compressions.

## Material and method

We planned a pilot study (in progress) to evaluate the capability of CCUS to improve the quality of chest compressions while CPR is taking place.

## Results

We describe data of a small case series from 6 non traumatic cardiac arrests who was treated both in-hospital and in pre-hospital settings.

In 3 out of 6 patients compressions were correctly performed while in the other 3 cases partials left ventricle compression or the narrowing of the base of the heart and aorta was observed. Ultrasound guided changes in hands

position improved passive left ventricle contractility in the 3 incorrect CPR.

## Conclusions

Our study doesn't permit to estimate if the changes made in hands position would have affected the outcome of CPR.

Anyway we think that the possibility to focus the power of the hands over the real position of left ventricle certainly improves the quality of our chest compressions.

Published: 9 March 2015

## References

1. Sayre MR, Koster RW, Sayre MR, et al: Adult Basic Life Support: 2010 International Consensus on Cardiopulmonary Resuscitation and Emergency Cardiovascular Care Science With Treatment Recommendations. *Circulation* 2010, **122**:S298-S324.
2. Hwang SO, Zhao PG, Choi HJ, et al: Compression of the Left Ventricular Outflow Tract During Cardiopulmonary Resuscitation. *Acad Emerg Med* 2009, **16**:928-933.
3. Shin J, Rhee JE, Kim K: Is the inter-nipple line the correct hand position for effective chest compression in adult cardiopulmonary resuscitation? *Resuscitation* 2007, **75**:305-310.
4. Hoppmann RA, Bell FE, Hoppmann NA, et al: Hand-held ultrasonography to assess external chest compressions on a fresh cadaver. *Resuscitation* 2013, **84**(8):e93.

doi:10.1186/2036-7902-7-S1-A32

**Cite this article as:** Benato et al.: Ultrasound guided chest compressions during cardiopulmonary resuscitation. *Critical Ultrasound Journal* 2015 **7** (Suppl 1):A32.

\* Correspondence: mirko.zanatta@ulss5.it  
Emergency Department of Arzignano Hospital, ULSS5 Ovest Vicentino, Vicenza, Italy