LETTER TO THE EDITOR

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Should we look for new methods of chest compressions in newborns and infants?

Czy powinniśmy poszukiwać nowych metod kompresji klatki piersiowej u niemowląt i noworodków?

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SIR,

We have read with great attention the article by Smereka et al. published in “Progress in Medicine Journal”, which raises the issue of the quality of cardiopulmonary resuscitation in infants (1). The paper refers to Smereka et al. novel newborn chest compression method using two thumbs directed at the angle of 90° to the infant’s chest while closing the fingers of both hands (2-4). The published study seemed very interesting and therefore we decided to verify the effectiveness of three methods of chest compressions in infants. We performed a cross-over randomized manikin study in a group of 52 nurses. During the study, we used two methods recommended by both the European Resuscitation Council and the American Heart Association: the two-finger technique and the standard two-thumb technique. Additionally, a novel two-thumb chest compression technique described by Smereka et al. was applied for evaluation (4).

The study involved 52 nurses whose average age was 34.5 ± 6.5 years and mean work experience equaled 8.5 ± 4.8 years. The participants were instructed in all three chest compression methods applied in a standard infant manikin, ALS Baby trainer (Laerdal, Stavanger, Norway). Then, after a week from the training, a targeted study was conducted in which the nurses were asked to perform continuous chest compressions for 2 minutes. Only chest compression parameters were analyzed. The involved manikin represented an infant and allowed to record the parameters of frequency and depth of compressions, the degree of chest relaxation, as well as the correctness of hand position on the chest during the compressions (5-8). The order of both compression techniques and the participants was random; for this purpose, Random Allocation Software version 1.0 was used.

Table 1 presents the results of our study. The two-finger technique turned out inadequate in terms of chest compression depth and rate, but revealed good quality in hand position and full chest release. Both two-thumb techniques allowed to achieve adequate chest compression rate and depth, but the novel chest compression technique described by Smereka et al. was bound with a significantly better chest compression full release (92 vs 51%) as compared with the standard two-thumb technique. Our results suggest that the novel chest compression technique offers several advantages and further animal studies should be performed.

Tab. 1. Infant chest compression quality parameters in the three examined methods

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Two-finger technique</th>
<th>Standard two-thumb technique</th>
<th>New two-thumb technique</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chest compression depth [mm]</td>
<td>33 (IQR: 31-36)</td>
<td>41 (IQR: 36-42)</td>
<td>40 (IQR: 38-41)</td>
<td>0.013</td>
</tr>
<tr>
<td>Chest compression rate [/min]</td>
<td>130 (IQR: 127-135)</td>
<td>116 (IQR: 110-124)</td>
<td>118 (IQR: 114-122)</td>
<td>0.045</td>
</tr>
<tr>
<td>Full chest release [%]</td>
<td>87 (IQR: 82-95)</td>
<td>51 (IQR: 36-59)</td>
<td>92 (IQR: 87-100)</td>
<td>0.003</td>
</tr>
<tr>
<td>Correct hand position [%]</td>
<td>100 (IQR: 95-100)</td>
<td>97 (IQR: 91-99)</td>
<td>100 (IQR: 94-100)</td>
<td>0.712</td>
</tr>
</tbody>
</table>
BIBLIOGRAPHY


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