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Letter to the Editor

What is the best chest compression technique for a cardiac arrest infant?

Sir,

I read with great interest the article by O'Connell et al. titled "The Effect of Hand Position on Chest Compression Quality During CPR in Young Children: Findings from the Videography in Pediatric Emergency Research (VIPER) Collaborative".[1] It was an interesting result that the two thumb (TT) encircling hand technique was used only in 27% of in-hospital infant cardiopulmonary resuscitation (CPR) cases.[1] In addition, it was surprising that the one-handed (OH) chest compression technique or the two-handed (TH) chest compression technique were used in over 44% of cases during infant CPR.

Previous studies had been focused on comparing the TT technique with the two-finger (TF) chest compression technique during infant CPR and the OH technique with the TH technique during child CPR because the CPR guidelines restricted the TF and TT techniques for cardiac arrest in infants and the OH and TH techniques for cardiac arrest in children over 1 year old. Although no study had compared the performance of the TF or TT technique with the OH or TH technique until now, previous studies had reported the average power of each technique.[2,3] The average power of the TT technique was 23.8 ± 10.1 kg, and those of the conventional and vertical OH techniques were 24.5 ± 4.2 kg and 25.7 ± 4.4 kg.[2,3] Although we could not determine which is the best compression technique between the TT technique and the OH technique for a cardiac arrest infant only depending the chest compression power because of similar chest compression powers, the data of the present study supported that the OH technique could achieve deeper chest compression than the TT technique during infant CPR.[1] However, we should consider another aspect of the chest compression technique for choosing the appropriate technique during an infant CPR: the contact area between the rescuer's hand or finger and the infant's chest wall including the sternum. A neonatal sternum is less than 4 cm long and it reaches 8 cm around 4 years old.[4] Considering the adult rescuer's hand width was around 8 cm, the contact areas of the OH or TH techniques could exceed the length of an infant sternum.[5] The problem is that we don't know whether the risk of injury would be increased when the contact areas of the chest compression techniques exceed the length of the infant sternum. Therefore, more data is needed before choosing the OH or TH technique as the best chest compression technique for cardiac arrest infants. If the risk of injury might exceed the benefit of high-quality CPR including a deeper chest compression depth, we should not apply the OH or TH technique to cardiac arrest infants.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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