

## **Point by point response to reviewer**

Dear Editorial Board:

We were glad to receive E-mail for revision. Thank you and all reviewers for the valuable feedback regarding our manuscript. The advices were very important for us. We had addressed all of the comments and concerns, making changes to the manuscript accordingly. Here, a point-by-point response to the reviewer's comments as follows:

### **To Reviewer #1:**

*1- What are the new hypotheses that this study proposed*

**Answer :** We appreciated the reviewer's comment. The outcomes of cardiac arrest patients in China were poor. The unpredictability of sudden cardiac arrest is a primary problem that increases the difficulty of treatment and reduces the survival rate. An immediately activated emergency response system is an important part of the "chain of survival" for OHCA or IHCA patients. We hypothesized that different etiologies of SCA correlate with certain symptoms and that the immediate and correct recognition of symptoms and etiology can improve patient survival.

*2-What are the new findings of this study*

**Answer:** We appreciated the reviewer's comment. In this study, we found most patients had warning symptoms before cardiac arrest. Dyspnea, chest pain, and unconsciousness were the most common symptoms. The characteristics of the warning symptoms may be helpful in identifying the etiology and allowing the initiation of targeted treatment during CPR.

*3-What are the new methods that this study proposed*

**Answer:** We appreciated the reviewer's comment. This was a retrospective study. Two medical centers participated in this study. Both are general hospitals, and the number of emergency visits exceeds 10000 per year in each of the two hospitals,

which is the highest in Beijing. We included all adult patients with all-cause cardiac arrest who visited These hospitals. Data on population, symptoms, resuscitation parameters, and outcomes were analysed and compared between cardiac arrest patients with warning symptoms and those without warning symptoms.

We found that different etiologies of sudden cardiac arrest correlate with certain symptoms and that the immediate and correct recognition of symptoms and etiology can improve patient survival. It was possible to activate EMS before cardiac arrest, or go to the hospital before cardiac arrest.

*4-What are the key problems in this field that this study has solved*

**Answer :** We appreciated the reviewer's comment. Previous research found warning symptoms frequently occurred before cardiac arrest, and most symptoms recurred during the 24-hour period before cardiac arrest. In our study, it was remarkable that 65.9% of the patients had warning symptoms. Dyspnea, chest pain, and unconsciousness were the most common symptoms. Once warning symptoms appeared, immediate activation of EMS could enable patients to receive treatment as early as possible. Due to the low rate of bystander CPR in China, immediate recognition of cardiac arrest and activation of emergency response may prevent CPR delay and then increase the survival rate of cardiac arrest patients.

*5-what are the limitations of the study*

**Answer:** We appreciated the reviewer's comment. There were many limitations of our study. First, we collected information on warning symptoms within 24 hours before cardiac arrest. But we can't know the exact time of the warning symptoms occur and can't know whether the warning symptoms recurred. Second, we were unable to obtain information on the severity of symptoms from electronic medical records. We can't know the relationship between severity of symptoms and cardiac arrest. Third, we were unable to obtain many time information from the electronic medical records, such as time of calling ambulance, time of EMS arrival, time of begin CPR and so on. We can't know the impact of warning symptoms on EMS

performance. The research project we are cooperating with Beijing Emergency Medical Center will focus on the above problems.

6- The authors did not mention organ transplant patients and patients with cardiac assisted device.

**Answer:** We appreciated the reviewer's comment. In Chinese traditional culture, most people can't accept organ transplantation. People thought the body was indivisible and it was unacceptable to cut any part or organ from a living person or brain dead patients. The lack of organ donors was a major problem in the field of organ transplantation in China. Cardiac assisted device was still a new technology in China. It was too expensive and not covered by insurance, so most Chinese patients can not afford it. Based on these situation, there were no such patient with organ transplant or cardiac assisted device in Peking University Third Hospital and Beijing Friendship Hospital during this study period. That was the reason why we did not mention these patients in our manuscript.

**To Reviewer #2:**

*- the abbreviated words should be explained even in the abstract, but also in Table and Figures.*

**Answer :** We appreciated the reviewer's comment. We revise the manuscript according to the comments. All abbreviations are explained or defined when they first appear in abstract, main text, Figures and Tables.

*- capital letter for the name of the universities or hospitals*

**Answer :** We appreciated the reviewer's comment. We revise the manuscript according to the comments and recheck all the name of the universities or hospitals

*- SPSS should include also the city and country*

**Answer :** We appreciated the reviewer's comment. We revise the manuscript according to the comments as follow: SPSS (IBM Corp. IBM SPSS Statistics for

Windows, Version 25.0. Armonk, New York, USA).

*- check the way you name the group without symptoms and present it... "the with symptoms group was older"... better to use "the patient with symptoms had a higher mean age".*

**Answer :** We appreciated the reviewer's comment. We revise the manuscript according to the comments.

We have answered all of the questions that the reviewers asked and added the revision to the manuscript.

Besides we revise the manuscript according to the Editorial Office's comments. And we send our revised manuscript to a professional English language editing company for re-editing and then provide a new language certificate along with the manuscript.

Because the revision manuscript needs to be divided into separate parts and uploaded to the system, all changes which are highlighted can't be seen in automatically generated files. We are very sorry for that.

I hope that you will find these answers suitable. Thank you again for your advice and hope to learn more from you!

Sincerely

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