Author's response to reviews

Title: A statistical model that predicts the length from the left subclavian artery to the celiac axis; towards accurate intra aortic balloon sizing.

Authors:

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Author's response to reviews: see over
Dear Editor

The current submission has remained the same, because according to the reviewers no major changes required. Point by point response to the reviewers is presented below. All those points asked by the reviewers have already been answered in the original manuscript.

The reviewer’s comments are addressed below:

**Reviewer: Dimitrios Mikroulis**

1) It is an interesting work but with limitations of the small number of cadavers, especially over 182 cm height.

   We agree, that the number of cadavers studied is limited, however one should take into consideration that there are difficulties in recruiting more subjects in the study and also that this is a unique study of its kind

2) A second question is about the race and nationality of the cadavers.

   The work was carried out in UK

**Reviewer: Panagiotis Dedeilias**

My only objection is that the sizes of the various balloon lengths do not only depend on the size of the IABP itself but also to the different companies. For example is the 40cc IABP byDatascope the same in length as compared to the Arrow one? Are there any differences among the products of different companies?
There are very small differences amongst companies, all lengths and diameters in the table below, take this into consideration.

<table>
<thead>
<tr>
<th>Volume cc</th>
<th>Membrane length (cm)</th>
<th>Inflated diameter (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>25</td>
<td>18</td>
<td>13</td>
</tr>
<tr>
<td>30</td>
<td>19.8-24.1</td>
<td>15-15.6</td>
</tr>
<tr>
<td>34</td>
<td>21.9</td>
<td>14.7</td>
</tr>
<tr>
<td>40</td>
<td>26.3</td>
<td>15-16.2</td>
</tr>
<tr>
<td>50</td>
<td>27.5</td>
<td>18.3</td>
</tr>
</tbody>
</table>

**Reviewer: STAVROS SIMINELAKIS**

1) The sample upon which they derive their results is of 40 people. Since, the only contribution of the paper is the equation for the length of the balloon and the empirical suggestions derived from it, I believe that more measurements are due in order to increase the accuracy and confidence in the predictive power of the equation. This wouldn't be a severe setback for the authors as all measurements are obtained from cadavers with no special medical history and therefore would be easy to obtain.
We agree, that the number of cadavers studied is limited, however future measurements would allow us to take this work to the next level: Towards validation of the current equation regarding IABP sizing

2) The use of the term "mathematical model" is perplexing as it implies a model for the underlying physical process or structure that produces the phenomenon under study, whereas the authors use statistical methods. I recommend that the term "statistical model" be used instead.

We agree

3) Statistical review: Yes, but I do not feel adequately qualified to assess the statistics.

The statistics were carried out by the Department of Statistics and Epidemiology of the University of Patras, Greece.
The “row data” are also published and are available on the paper

Yours sincerely

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