Reviewer’s report

Title: Tissue ischemia microdialysis assessments following severe traumatic haemorrhagic shock: lactate/pyruvate ratio as a new resuscitation end point?

Version: 2  Date: 26 September 2014

Reviewer: Eva Fuentes

Reviewer’s report:

MAJOR COMPULSORY REVISIONS
1. The question does not follow the PICO principle (Problem/Population, Intervention, Comparison, Outcomes). The gap in knowledge scattered throughout the introduction but lacks a clear problem statement. The targeted population is not mentioned. The intervention (in this case observation) is not well defined. The difference between variables and outcomes is not clear. An example following PICO principle would be:
   Problem/population: Tissue ischemia is poorly assessed by commonly used perfusion markers in trauma patients (Trauma patients is very broad, requires a more specific definition)
   Intervention: To measure LPR
   Comparison: Assess the correlation of LPR with Hb and CO
   Outomes: Tissue ischemia (needs a definition)

2. Materials and methods are not well explained. Inclusion criteria needs to be more specific
   1. What was the definition used for “polytrauma” patients
   2. How was severe hemorrhagic shock defined?
   3. There is no exclusion criteria mentioned.
   4. Figure 1 requires modification to match the aforementioned requirements. Was ICU admission or undergoing surgery an exclusion criterion? Dead within how many hours?

The sequence of manipulations and measurements does not flow chronologically. It should first state ALL the variables measured and how this was done and the chronological description. For example “Hb, CI, ScvO2, arterial lactate, issue Lactate and tissue pyruvate levels were collected using…” and then the chronological description. I understand how LPR was obtained but a clearer definition should also be included. Why was only data from the first 24 hours included? Please change the word “interpolated” to a clearer one, maybe matched? Last sentences (lines 128-131) refer to data categorization, please rephrase accordingly.

Paired T-test is generally used to measure differences in the same group of individuals or matched ‘pairs’ after an intervention is done. It is not a marker of
correlation. Pearson and Spearman correlation index are generally used.

3. Results are not presented in a clear fashion. Better tables are needed. The word “dependency” should be substituted by one used to describe interaction between variables. Depending on the statistical test used, it could either be association or correlation. On line 145 you describe 53 patients for whom data was collected, figure 1 describes 48 patients as having been analyzed, please clarify. Normal distribution is rarely seen in small samples (n<100) therefore you might want to consider using median and IQR as your central tendency and dispersion measurements respectively and non parametric tests to assess for association. You report variables that were not considered initially in the materials and methods such as pre-hospital care time, ED time, OR time. Last sentence in line 149 should be part of materials and methods and requires further explanation, comorbidities and mechanism of injury were not taken into account for what? The word “assigned” should be changed, the way it is, it reads as if the Lactate, SvO2 and LPR values were arbitrarily designated to certain Hb category by you. Maybe saying “the Lactate, SvO2 and LPR values and its association with Hb are shown in table1”. Table 1 should always be a descriptive one, i.e. population general demographics and characteristics. Line 162 contains the definition of what tissue ischemia is, this should be part of the materials and methods. Line 165 the word “connected” does not describe interaction between variables and outcomes, consider changing it for a more suitable word that best describes your findings. Line 171: p=0.05 is generally not considered statistically significant.

5. A paragraph including the limitations of the work is strongly suggested. For instance, small sample size.

6. There are severe grammar mistakes scattered throughout the text, it also lacks flow from one paragraph to the following making it hard to understand and follow. I would very strongly encourage you to consult an English specialist medical writing reviewer. I think after doing so, the discussion and conclusion will significantly improve, facilitating the reviewer’s judgment. Right now it is hard to assess whether there is a scientific deficiency or just grammar issues.

**Level of interest:** An article whose findings are important to those with closely related research interests

**Quality of written English:** Not suitable for publication unless extensively edited

**Statistical review:** Yes, and I have assessed the statistics in my report.

**Declaration of competing interests:**

I declare that I have no competing interests