Reviewer’s report

Title: Hyperbaric Oxygen Therapy as an Adjunctive Treatment for Sternal Infection and Osteomyelitis after Sternotomy and Cardiothoracic Surgery

Version: 3 Date: 28 August 2011

Reviewer: Shao-Yuan Chen

Reviewer’s report:

Major Compulsory Revisions

Reviewer Comments:

This paper presents retrospective study to support the efficacy of HBOT as an adjunctive treatment for sternal infection and osteomyelitis. Although the authors used some parameters, such as length of ICU stay, duration of MV use and mortality, to demonstrate the benefit of HBOT to the patient with sternal infection, there are still some points needed to be clarified

Major

1. The severity of infection can cause different clinical outcome. Therefore, the treatment to the simple surgical site infection (SSI) should be different from the treatment to concomitant with osteomyelitis. In your HBOT group, there were no data to show how many patients have only SSI and how many patients have SSI concomitant with osteomyelitis. Is that possible less sternal osteomyelitis patients in your non-HBOT group?

2. As the authors mention that HBOT have already widely used in refractory osteomyelitis, please emphasize the significance of this study in your introduction, e.g. what the results and conclusion in your reference No.13 that I do not see where you cited? Otherwise, it seems not necessary to conduct this study.

3. In conclusion, the authors suggest a combination of surgery, antibiotics treatment and HBOT for patient with sternal infection and osteomyelitis. What is the timing of HBOT? Is the HBOT administered when the patients have SSI and/or osteomyelitis?

4. In addition to all the data showing in tables, the authors may make a figure including the parameters with statistic significance.

Minor

1. In the 2nd of paragraph of discursion, “the pathophysiology of sternal wound infection and osteomyelitis, by nature, is...” Could the authors explain what’s the meaning of “by nature”? Please also cite the reference to support your viewpoints.

2. Please also cite the reference to “HBO itself also acts as an antibiotic agent
against a broad spectrum of gram + and – bacteria” in the 3rd paragraph of discussion.

3. The authors need to rearrange the references in right order and citation.

**Level of interest:** An article of importance in its field

**Quality of written English:** Needs some language corrections before being published

**Statistical review:** No, the manuscript does not need to be seen by a statistician.

**Declaration of competing interests:**

'I declare that I have no competing interests'