Reviewer's report

Title: Paracentesis after central retinal artery occlusion: a tenable therapy?

Version: 2 Date: 23 December 2013

Reviewer: Seong Joon Ahn

Reviewer's report:

The authors investigated the visual outcome of acute non-arteritic CRAO following paracentesis. This is interesting but lacks sufficient novelty to warrant publication.

1. Why main outcome was set as BCVA at 3 days after the therapy? Clinicians may not choose the therapy based only on results obtained at Day 3. The authors stated that it is unlikely that any significant relative improvement of visual acuity might have occurred beyond our follow-up time of 3 days among the patients treated with paracentesis. But it is unproven, and I believe that there is still a chance for patients with relatively fair baseline visual acuity to experience further visual improvement after Day 3. Most importantly, the procedure itself may affect 3-day visual outcome regardless of therapeutic effect as it is not impossible that anterior chamber paracentesis may deteriorate visual acuity measured 3 days after the therapy even in eyes without CRAO.

2. Title:

Paracentesis is a form of body fluid sampling procedure in general and thus the title of this paper should specify where the paracentesis was performed for the treatment of CRAO.

3. In the Abstract, please specify what 'standard therapy' is. In 15 patients treated 'conservatively', did they receive same treatment? How about 59 patients treated with paracentesis? Heterogeneity of the treatment within each group may significantly affect the results.

4. The authors wrote 'Standard treatment consisted of routine anticoagulation with low molecular weight heparin adjusted to patient body weight twice daily, bloodletting for hematocrit #40%, and paracentesis in certain cases.'

The rationale for the use of A/C paracentesis in eyes with CRAO is to reduce intraocular pressure, which may lead to retinal reperfusion. However, for the purpose of lowering IOP, A/C paracentesis seems invasive compared to topical IOP-lowering agent. Why didn’t the authors use topical or systemic IOP-lowering drops for the ‘standard treatment’ in addition to A/C paracentesis? A/C paracentesis may exert quick but temporary IOP-lowering effect, which might not be sufficient for the therapeutic effect, which might be obtained using noninvasive medical treatment.

5. Also, the authors wrote ‘Paracentesis was performed by a brief puncture of the
cornea with a paracentesis blade to drain a FEW DROPS of aqueous fluid. The procedures are too subjective to follow and may result in variable amount of removed aqueous humor. Accordingly, the IOP-lowering effect may differ widely among the patients treated with A/C paracentesis. Furthermore, the information on intraocular pressure before and after the A/C paracentesis was not given; we are not sure how effectively IOP was lowered in the patients treated with A/C paracentesis as it is impossible to quantify the amount of removed aqueous humor and thus the effect of A/C paracentesis in the setting.

6. The number of patients who were treated without A/C paracentesis is so small (n=15), the power of comparative analyses between patients with and without paracentesis is low. Selection bias in this retrospective study is inevitable.

7. Data presentation is quite confusing. As the main result in this study is the comparison of BCVA between patients treated with and without A/C paracentesis, I suggest that patient pool, study parameters, time to treatment, and visual acuities should be compared between patients with paracentesis as one group and those without paracentesis as the other group. The current presentation divided on 3 groups in the eyes treated with paracentesis may not be effective for the readers to understand the main comparison.

8. It is not clear why the authors compared risk factors of CRAO between patients treated with and without A/C paracentesis in this study focusing on comparison of visual outcomes between different treatment groups. Is there any association between visual outcome and risk factors of CRAO?

**Level of interest:** An article of limited interest

**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.