**Author’s response to reviews**

**Title:** Optic disc morphology in unilateral branch retinal vein occlusion using spectral domain optical coherence tomography

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**Author’s response to reviews:**

Haoyu Chen
Academic Editor
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Budapest, October 17 2015.

Dear Dr. Chen,

We would like to thank You and Reviewers for the valuable and constructive comments on our manuscript entitled “Optic disc morphology in unilateral branch retinal vein occlusion using spectral domain optical coherence tomography”

In the following, we answer in detail to the specific comments and additional requests of Reviewer:

Reviewer #1: General comments: This is a simple but informative study, focusing on the association between ONH parameters and BRVO. The language should be checked throughout the whole paper.

specific comments:

1. The authors highlight that the effect of AL was considered in this paper. However, the effect of AL on the optic disc measurements was not mentioned in the methodology. Correction for magnification in OCT optic disc measurements is important. In this study,
there is significant difference in AL between the two groups. Thus, correction for magnification in OCT optic disc measurements is strongly recommended. Please refer to "Optic disc measurements in myopia with optical coherence tomography and confocal scanning laser ophthalmoscopy. Leung CK, Cheng AC, Chong KK, Leung KS, Mohamed S, Lau CS, Cheung CY, Chu GC, Lai RY, Pang CC, Lam DS. Invest Ophthalmol Vis Sci. 2007 Jul;48(7):3178-83."

We thank the Reviewer for these valuable comments. Correction for magnification in OCT optic disc measurements is important and should not be overlooked. Therefore, we inserted the next paragraph to the limitation section and referenced Leung et al’s manuscript.

“There are several limitations to our study. ..... Third, we did not use correction for magnification in OCT optic disc measurements. Leung et al [44] evaluated the relationships between optic disc measurements and AL. The modified AL method derived from Bennet et al [45] was used to correct the OCT measurements for ocular magnification. The magnification corrected disc area correlated significantly with the AL, for each millimeter increase in AL, the optic disc area increased by 0.095 mm2. The determination of disc area has significant influence in the evaluation of all the optic disc-related parameters. Correction for magnification in OCT optic disc measurements is therefore very important and should not be overlooked.”


2. the discussion part should be concise and focus on the ONH parameters. The discussion should be carefully checked by a native speaker. For example, line 198 to line 207 should not be presented. Line 268 to 278 should be more concise.

Language editing was done in the entire manuscript.

According to the Reviewer’s suggestions, we compacted the Discussion. We deleted the suggested paragraph.

We shortened the lines 266 through 278, we discussed only the BRVO cases and not other RVO types from Actis’s study. (line 257 to 261)

“Actis et al. [15] evaluated ONH parameters in patients with different types of RVO using HRT. In their RVO patients, the most frequent occlusion site in the not-glaucomatous patient group was at the level of an arteriovenous crossing. They found a smaller cup area, smaller CDR and higher rim volume in the arteriovenous crossing RVO group. They did not measure AL in their study.”
3. Discussion: the findings of the present study is different from REFERENCES 8 and 14. The author needs to discuss on it (the different methodology of ONH parameters measurement should be discussed).

We thank the Reviewer for this valuable comment. Hayreh et al. [ref 14] studied the unaffected fellow eyes of 1222 RVO patients from stereoscopic photographs of the optic disc. They evaluated only CDR and no other ONH parameters. The difference between the studies of Hayreh et al., The Beijing Eye Study, Klein et al. and the present study is discussed in Line 240 to 246.

“However, the major limitation of all these previous studies is that all optic disc parameters were obtained from stereoscopic or nonstereoscopic fundus photographs and the authors did not measure and involve AL in the statistical analysis. Some of them evaluated only CDRs, and not the disc or cup area, and in some studies the RVO group was very heterogeneous. The evaluation of fundus photographs is subjective and depends on the experience of the examiner. Compared with optic disc stereo photographs, confocal scanning laser tomography and OCT provides objective and quantitative data. [7, 16, 17, 35]”

In The Singapore Indian Eye Study [ref 8], optic disc parameters were quantified using Heidelberg retinal tomography (HRT). We inserted a new paragraph that discussed the differences between the two methodology (HRT vs RTVue) for ONH analysis. (line 275 to 286)

“According to previous studies [36-37], HRT and RTVue-100 devices were not interchangeable for ONH analysis. RTVue-100 values were larger for the cup area, CDRs, and HRT values were consistently larger than RTVue-100 values for rim area. Basically, the main difference between the two devices is the position of the reference plane in relation to the optic disc margin. The RTVue-100 automatically determines the edge of the ONH as the end of the the RPE/BM layer. A straight line connects the edges of the RPE/BM, and a parallel line is constructed 150 μm anteriorly. Structures below this line are defined as the disc cup and above this line as the neuroretinal rim. In contrast, the HRT machine automatically calculates a reference plane that is located 50 μm posterior to the retinal surface. Structures underneath the reference plane and within the contour line are defined as the disc cup. Structures above the reference plane and within the contour line are defined as the neuroretinal rim. [37]”


4. Language: for example, line 89 "Hgmm" should be "mmHg"; lines 129 and 174 "CdaR" should be "CDaR"; Line 177 "After controlling for AL, age and gender there was no a significant difference in ONH" should be "After controlling for AL, age and gender, there
was no significant difference in ONH; Line 258 "Actis [15] evaluated" should be "Actis et al. [15] evaluated"

We are very grateful for these important remarks by the Reviewer.

We changed “Hgmm” to “mm Hg” in line 89.
We changed the abbreviation of cup-disc area ratio from” CdaR” to “CDaR” everywhere in the manuscript. (line 127, 172, 293, 317, in Table 2 and 3)

Line 175, we changed the sentence according to Reviewer’s suggestion.

Line 257, we changed “Actis” to “Actis et al”.

English language in the entire manuscript was checked carefully.

Reviewer #2: It is truly a great effort on the part of the authors to have compiled data and done a very thorough review of literature of the topic.

Inclusion criteria are very well selected and pertinent to note that authors have excluded glaucomatous discs, patients with H/O POAG, first degree relatives as well as those with optic disc swelling following BRVO.

Continuity of flow in discussion needs to be commended wherein the authors begin with the risk factors of BRVO; then justify the present study by quoting other studies which provided evidence for association between ONH parameters and BRVO. The review of literature has been very meticulous wherein the authors have made an applaudable effort to review each previous study along with their findings and drawbacks. Authors have very well justified the exclusion of patients with optic disc swelling and the necessity of keeping AL as control. Despite the limitations of the present limitations of the study; it is truly a well-conceived, well-expedited, well-reported and well-reviewed study.

We thank for the Reviewer’s comments and commendations.

Editorial Requests

Please note that all submissions to BMC Ophthalmology must comply with our editorial policies. Please read the following information and revise your manuscript as necessary. If your manuscript does not adhere to our editorial requirements this will cause a delay whilst the issue is addressed. Failure to adhere to our policies may result in rejection of your manuscript.

Ethics:
If your study involves humans, human data or animals, then your article should contain an ethics statement which includes the name of the committee that approved your study.

If ethics was not required for your study, then this should be clearly stated and a rationale provided.

All participants were treated in accordance with the tenets of the Declaration of Helsinki. Institutional Review Board approval was obtained for all study protocols (Semmelweis University Regional and Institutional Committee of Sciences and Research Ethics, license number: TUKEB 25435-5/2014/EKU). (Line 64-67)

Consent:

If your article is a prospective study involving human participants then your article should include a statement detailing consent for participation.

If individual clinical data is presented in your article, then you must clarify whether consent for publication of these data was obtained.

Written informed consent was obtained from all participants. (Line 67)

Availability of supporting data:

BioMed Central strongly encourages all data sets on which the conclusions of the paper rely be either deposited in publicly available repositories (where available and appropriate) or presented in the main papers or additional supporting files, in machine-readable format whenever possible. Authors must include an Availability of Data and Materials section in their article detailing where the data supporting their findings can be found. The Accession Numbers of any nucleic acid sequences, protein sequences or atomic coordinates cited in the manuscript must be provided and include the corresponding database name.

To our understanding the data underlying the findings were those reported in the tables and figures. Having read the BioMed Central policy we realized that there have been changes since our last accepted publication in BMC Ophthalmology. Of course, we happily support this initiative and make all our data fully available without restriction. We uploaded them in Excel files as Supplements 1 and 2, and inserted the following legends after Tables.

,, Supplemental Information (raw study data):

S1 Table. Demographical data (age; gender; hypertension, diabetes mellitus) type of occlusion, affected eye, SER, BCVA, AL, ONH parameters and SSI of affected and unaffected fellow eyes of our BRVO study subjects.
S2 Table. Demographical data (age; gender; hypertension, diabetes mellitus) involved eye, SER, BCVA, AL, ONH parameters and SSI of control patients.”

Authors Contributions:
Your 'Authors Contributions' section must detail the individual contribution for each individual author listed on your manuscript.

Line 369-374.

“ASZ recruited the patients, wrote the manuscript, participated in study design, ethical approval, performed the statistical analysis. EM carried out the measurements. MS and ZN helped in formatting, language, reviewed the literature. ZSR participated in study design, critical reading of the manuscript, provided equipments and facility, study design. All authors read and approved the final manuscript.”

We hope that our revised manuscript will meet the high demands of the Journal.

Sincerely yours,

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