Author's response to reviews

Title: M-charts as a tool for quantifying metamorphopsia in age-related macular degeneration treated with bevacizumab injections

Authors:

Katarzyna Nowomiejska (katarzynanowomiejska@mailcity.com)
Agnieszka Oleszczuk (agaoleszczuk@yahoo.com)
Agnieszka Brzozowska (agnbrzo@autograf.pl)
Piotr Ksiazek (zdrowie.publiczne@umlub.pl)
Robert Rejdak (rrejdak@yahoo.com)

Version: 2 Date: 14 February 2013

Author's response to reviews: see over
14.02.2013

Dear Editor of “BMC Ophthalmology”,

Thank you very much for reviewing the manuscript “M-charts as a tool for quantifying metamorphopsia in age-related macular degeneration treated with bevacizumab injections” by Katarzyna Nowomięska, Agnieszka Oleśzcuk, Agnieszka Brzozowska, Andrzej Grzybowski, Piotr Książek and Robert Rejdak

We would like to thank for the constructive comments of the associate editor and the reviewers. The manuscript is now corrected as suggested addressing all remarks included.

Reviewer 1 (Grant Comer)

Major Compulsory Revisions

1. The authors need to convince the reader why using M-charts matters. The beauty of an Amsler grid is that a patient can screen themselves at home and contact the doctor with changes to the grid. If an M-chart can be used at home, please state that clearly.

   In this case, the major conclusion of your paper should be that M-charts is a more effective home-screening test than an Amsler. However, if an M-chart can only be used in the eye-care professionals office, then detecting or quantifying metamorphopsia has minimal significance because it won't change the diagnosis and management. The exudative AMD will be detected on the clinical examination with or without OCT and the response to treatment will be quantified with the OCT, which serves as a reliable structural measure.

   In the abstract and discussion the sentence “Moreover, they can be used at home for the self-assessment” is added.

   In the “Methods” chapter the following sentence is added:
   Dotted lines with interval changes from fine to coarse are printed on the following paper pages and are shown to the patients one after another.

2. The article needs professional editing for relatively minor grammar, clarity, and structural issues.

   The article has been reviewed and corrected by a person professional in English for grammar and structural issues.

Minor Essential Revisions

1. Figure 1 needs more clarification to enhance understanding.

   The description of the figure has been extended:
   Example of the result of vertical (VM=0.4°) (left) and horizontal (HM=0.5°) (right) M-chart. Dotted lines are shown to the subject one after another (starting with the solid line - 0°), until the subject recognizes the line as being straight. In this case the vertical solid line was very distorted, following lines with larger dot intervals were recognized as less distorted. Line 0.4° was recognized as straight, thus the vertical metamorphopsia score is 0.4°. After rotating M-charts 90° into the horizontal direction the same procedure was performed, until line 0.5° was recognized as straight, thus the horizontal M-chart score is 0.5°.
2. *Figure 2 has poor resolution and is nearly unreadable.*

Figure 2 has been converted to achieve a better resolution.

*Discretionary Revisions*

1. In the introduction, the authors call M-chart 'new' however, the citation is over 20 years old. Consider removing the word 'new'.

   The word “new” was deleted from introduction chapter.

Reviewer 2 (Pierluigi Iacono)

*Actually the gold standard for evaluating the activity of CNV is the OCT and the fluorescein angiography (eventually combined with ICGA). A parameter that takes into account the activity of the CNV lesions should therefore be compared with these method.*

OCT is generally preferred, rather than FA, diagnostic test to characterize macular anatomy in clinical practice and clinical trials. It is easy, quick and non-invasive, thus we think that OCT alone is good enough to assess the effectiveness of bevacizumab injections. It has also been reported that FA may not see anti-VEGF response as clearly as OCT.

In the manuscript he term “wet AMD” instead of “CNV” is used.

In the Introduction chapter following sentences have been added:

With introduction of new treatment modalities preserving macular function non-invasive and quick assessment of efficacy of the treatment is crucial for diagnostics of AMD. Fluorescein angiography may be associated with serious complications [2], hence it has been replaced in clinical practice by Optical Coherence Tomography (OCT). OCT is proving to be an accurate and reproducible tool for qualitative and quantitative assessment of the macular structure [3]. For assessment of the visual function in patients with wet AMD, visual acuity and Amsler grid have been the gold standard.

*A comparison with the retinal thickness alone does not appear appropriate. One should consider the morphological analysis of the OCT scans and the fluorangiographic characteristics of the CNV.*

In abstract the following sentence has been changed:

M-charts provide additional information concerning the visual function, independent of the visual acuity, CRT and morphological changes in OCT.

In the Methods chapter new sentences have been added:

As the quantitative parameter of the structural examination the central retinal thickness (CRT) was used. It is the distance between the anterior (internal limiting membrane) and posterior (retinal pigment epithelium) highly reflected boundaries of the retina. Additionally, OCT results were assessed qualitatively and classified as serous pigment epithelial detachment, subretinal fluid, cystic retinal oedema or combination of these conditions.

In Statistical analysis chapter the following sentence is added:
Mann-Whitney test was used to assess the relationship between vertical and horizontal M-chart and quantitative results of OCT.

In Results chapter:
The results of OCT were as follows: subretinal fluid and intraretinal cysts in 15 cases, intraretinal cysts only in 13 cases, pigment epithelium detachment in 5 cases, subretinal fluid only in 2 cases and pigment epithelium detachment with subretinal fluid in 1 case. There were no statistically significant differences (p>0.05) in horizontal and vertical M-charts between above mentioned groups of patients.

Moreover, a longer follow-up would be more appropriate to determine if this method can be used to identify the cases with complete resolution of metamorphopsia, the cases with persistent metamorphopsia and the cases with recurrence of metamorphopsia associated with CNV recurrence.

It may be the purpose of the next study. The aim of the present study was to show the usefulness of M-charts in AMD before and after bevacizumab injections to obtain another – outcome measure in the assessment of effectiveness of anti-VEGF treatment.

In the Discussion chapter the following sentence is added:
A longer follow-up is needed to determine if M-charts can be used to identify the cases with complete resolution of metamorphopsia, the cases with persistent metamorphopsia and the cases with recurrence of metamorphopsia associated with CNV recurrence.

Two new references have been added:

Additionally, Prof. Andrzej Grzybowski who contributed in the revision of the manuscript and analysis of the data was moved from acknowledgments to the list of authors.

Kind regards,
Katarzyna Nowomiejska