HHS Public Access

Author manuscript

Graefes Arch Clin Exp Ophthalmol. Author manuscript; available in PMC 2017 January 01.

Published in final edited form as:

Graefes Arch Clin Exp Ophthalmol. 2016 January ; 254(1): 201–202. doi:10.1007/s00417-015-3107-y.

Science and art in retinopathy of prematurity diagnosis

Michael F. Chiang, MD[1], **R.V. Paul Chan, MD**[2], **Anand Vinekar, MD**[3], and **Rany Woo, MD**[4]

[1]Departments of Ophthalmology and Medical Informatics & Clinical Epidemiology, Oregon Health and Science University, Portland, OR, USA

[2]Department of Ophthalmology, Weill Cornell Medical College, New York, NY, USA

[3]Department of Pediatric Retina, Narayana Nethralaya Postgraduate Institute of Ophthalmology, Rajajinagar, Bangalore, India

[4]Department of Ophthalmology, Jules Stein Eye Institute, University of California, Los Angeles, Los Angeles, CA, USA

We appreciate the opportunity to respond to the insightful comments from Dr. Shapiro, Dr. Blair, and Mr. Garcia-Gonzalez. We agree that they have raised important points. Although many medical diagnoses are based on quantitative measurements, ophthalmic diagnosis is largely based on qualitative interpretation of visual patterns observed during examination and recorded using photographs or even hand-drawn sketches. The international classification of retinopathy of prematurity (ICROP) has been extraordinarily useful by creating a framework for disease classification based on discrete parameters (e.g. zone, stage, plus disease).[1] This universal classification system has transformed ROP diagnosis from being purely qualitative and descriptive to being systematic and standardized, and has created an infrastructure for improved clinical care and multi-center clinical trials.[2,3]

However, as the authors suggest, ROP diagnosis continues to be subjective and qualitative, even with ICROP. We and others have published studies showing that there is often significant disagreement, even among experts, regarding the diagnosis of ROP parameters such as plus disease and zone.[4–6] In this current study, we showed that these inter-expert discrepancies extend to aggressive posterior ROP (AP-ROP).[7]

On the one hand, we clearly agree with the authors that it would help to provide more guidance for practicing ophthalmologists regarding the diagnosis of AP-ROP, plus disease, zone, and stage. We are developing a website (http://www.i-rop.com) that will provide a range of examples based on our previous studies in this area. We also believe there may be a role for revised ROP classification methods that offer more guidance for ophthalmologists – perhaps by addressing issues such as “pre-AP-ROP”, and by providing methods for quantifying vascular abnormality using computer-based image analysis.[8] That said, we also feel that some of what the authors are describing may reflect the fact that the practice of

Corresponding author and reprints: Michael F. Chiang, MD, Casey Eye Institute, Oregon Health & Science University, 3375 SW Terwilliger Boulevard, Portland, OR 97239, Tel: 503-494-7830, Fax: 503-494-5748, chiangm@ohsu.edu.

FINANCIAL DISCLOSURE

Dr. Chiang is an unpaid member of the Scientific Advisory Board for Clarity Medical Systems (Pleasanton, CA).

medicine may inevitably have some qualitative, nuanced “art” that is difficult to capture using standardized classification schemes such as ICROP.[9]

We are grateful that this study has stimulated some interest, and hope to have chances to continue working with the authors, along with other experts in the field, toward advancing the science – as well as the art – of ROP care.

ACKNOWLEDGEMENTS

Supported by grants EY19474 and EY22837 from the National Institutes of Health (Bethesda, MD), and by unrestricted departmental funding from Research to Prevent Blindness (New York, NY).

REFERENCES

1. International Committee for the Classificaiton of Retinopathy of Prematurity. The International Classification of Retinopathy of Prematurity revisited. Arch Ophthalmol. 2005; 123:991–999. [PubMed: 16009843]
2. Cryotherapy for Retinopathy of Prematurity Cooperative Group. Multicenter trial of cryotherapy for retinopathy of prematurity: preliminary results. Arch Ophthalmol. 1988; 106:471–479. [PubMed: 2895630]
3. Early Treatment for Retinopathy of Prematurity Cooperative Group. Revised indications for the treatment of retinopathy of prematurity: results of the Early Treatment for Retinopathy of Prematurity randomized trial. Arch Ophthalmol. 2003; 121:1684–1694. [PubMed: 14662586]
4. Reynolds JD, Dobson V, Quinn GE, et al. Evidence-based screening criteria for retinopathy of prematurity: natural history data from the CRYO-ROP and LIGHT-ROP studies. Arch Ophthalmol. 2002; 120:1470–1476. [PubMed: 12427059]
5. Chiang MF, Jiang L, Gelman R, et al. Interexpert agreement of plus disease diagnosis in retinopathy of prematurity. Arch Ophthalmol. 2007; 125:875–880. [PubMed: 17620564]
6. Chiang MF, Thyparampil PJ, Rabinowitz D. Interexpert agreement in identification of macular location in infants at risk for retinopathy of prematurity. Arch Ophthalmol. 2010; 128:1153–1159. [PubMed: 20837799]
7. Woo R, Chan RVP, Vinekar A, Chiang MF. Aggressive posterior retinopathy of prematurity: quantitative analysis of vascular features. Graefes Arch Clin Exp Ophthalmol. 2015; 253:181–187. [PubMed: 25413261]
8. Wittenberg LA, Jonsson NJ, Chan RVP, Chiang MF. Computer-based image analysis for plus disease diagnosis in retinopathy of prematurity. J Pediatr Ophthalmol Strabismus. 2012; 49:11–19. [PubMed: 21366159]
9. Hewing NJ, Kaufman DR, Chan RVP, Chiang MF. Plus disease in retinopathy of prematurity: qualitative analysis of diagnostic process by experts. JAMA Ophthalmology. 2013; 131:1026–1032. [PubMed: 23702696]