Re: Gurwin et al.: A randomized controlled study of art observation training to improve medical student ophthalmology skills

(*Ophthalmology*. 2018;125:8–14)

TO THE EDITOR: During dinner recently, we discussed the article by Gurwin et al[1] on art observation training to improve medical student ophthalmology skills at the University of Pennsylvania, as well as the accompanying editorial by Gladwell and Epstein.[2] One of us (R.M.J.) remembered learning about similar training that was conceived of, implemented, and analyzed, 2 decades ago by Dr Irwin Braverman (R.M.J.'s medical school dermatology mentor), now Emeritus Professor of Dermatology at Yale Medical School. This work is referenced, but not described, by Gurwin et al.[1] We think that your readership would enjoy learning a little more about this earlier original work.

In the Yale study, published in the *Journal of the American Medical Association*, first-year medical students first were given 3 minutes to describe in writing the salient attributes of photographs of patients with medical disorders, and the quality of their descriptions was graded in a masked, standardized fashion.[3] They were then randomly assigned to a control group (n = 35) that attended clinical tutorial sessions in which they were taught history taking and physical examination by a physician preceptor, and the intervention group. The intervention group attended a program at the Yale Center for British Art. Each student studied a preselected painting for 10 minutes and described it to a group of 4 of their peers.

When students were again presented with photographs of patients, although the scores of both the control and intervention groups improved, the gains were greater in the intervention group. Not to be left behind by its Ivy League colleagues, Harvard's contribution to the field of art observation therapy involved trips to the Boston Museum of Fine Arts by dermatology residents for Visual Thinking Strategies that resulted in an improvement of their observational skills.[4] Clearly, there is merit to these approaches, and the possibility of extending them to ophthalmology residents, and even seasoned clinicians such as us, who could always benefit from a reboot of their powers of observation. Congratulations to the authors and editorialist for bringing this work into the ophthalmologic realm.

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The authors of the original article declined to reply.

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Re: Vogel et al.: Foveal development in infants treated with bevacizumab or laser photocoagulation for retinopathy of prematurity

(*Ophthalmology*. 2018;125:444-452)

TO THE EDITOR: We read with interest the article by Vogel et al[1] demonstrating the foveal development in infants treated with bevacizumab or laser photocoagulation for retinopathy of prematurity (ROP).[1] The authors concluded that intravitreal bevacizumab injection for ROP yields a more rapid outer retinal thickening at the foveal center and laser photocoagulation is related to delayed development of the ellipsoid zone at the fovea.[1] They also reported that the cystoid macular changes observed in the patients were not associated with the bevacizumab or laser treatment.[1]

When evaluating the effects of ROP treatment modalities on foveal structures, it is beneficial to take into consideration several confounding factors such as feeding pattern of the patient, birth week, weight gain, initial weight, amount of oxygen use, environmental lighting status, and associated systemic diseases. In addition, there may be other, treatment-related factors that can affect foveal structure, such as the intensity and extent of laser treatment, as well as the dosing and number of bevacizumab injections.

The study by Vogel et al[1] might be improved by adding some other macular imaging tests. OCT angiography would provide valuable data about the vascular development of the macula and status of the foveal avascular zone. In addition, fundus fluorescein angiography should be performed in patients with ROP, because the main pathology is associated with the retinal vasculature. As the authors pointed out, long-term follow-up is needed to better evaluate the effects of both treatment modalities. In cases of ROP, it is difficult to determine if having rapid outer retinal thickening is advantageous or delayed development of the ellipsoid zone at the foveal center is disadvantageous, because the normal macular development patterns may be somewhat altered. In further studies, performing vision tests, including assessment of acuity, contrast sensitivity, color vision, visual field, and a macula photo-stress test may provide additional information about the physiological benefit of those treatment options.

The beneficial effects of intravitreal anti-vascular endothelial growth factor agents in ROP treatment have been demonstrated.[2-4] There are some possible advantages of bevacizumab injection over laser therapy. Bevacizumab treatment is superior, especially in cases of aggressive posterior ROP and zone 1 disease.[3,4] In contrast, late-term recurrence rate and risk of persistent avascular zones may be lower in laser treatment.[5] Also, bevacizumab may have a risk of deterioration of other organ systems because it passes into the systemic circulation.[3-5] In further studies, by taking into consideration the miscellaneous confounding factors related to ROP, it would be easier to draw conclusions about the effects of anti-vascular endothelial growth factor and laser treatments on foveal development.

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REPLY: We thank Drs Pekel and Pekel for their interest and valuable commentary on our article. Our paper examines the different effect that 2 common treatment options for retinopathy of prematurity (ROP; laser photocoagulation and intravitreal bevacizumab) have on foveal development.

The commenting authors raise important points on confounding factors in these patients, including the feeding pattern of the patient, birth weight, weight gain, gestational age, amount of oxygen use, environmental lighting status, and associated systemic diseases. Several of these factors, such as age at birth and birth weight, were adjusted for in our statistical models. Nevertheless, large prospective randomized studies would be needed to thoroughly control for the wide range of possible confounders between treatment groups. Further complicating this issue, some of these factors are also likely important in the development of ROP (not just response to treatment). Regarding the treatment-related factors, our patients treated with bevacizumab received a single intravitreal injection with the same dose for all patients. The same surgeon performed all the laser treatments with similar power (although the extent of laser treatment depended on the amount of avascular retina). Although these factors may be useful within each treated group, the bevacizumab group had more avascular retina than the laser group because of the indications of treatment in each group. As the authors point out, bevacizumab is superior in aggressive posterior ROP and zone 1 disease, and we use it in these cases.

We also agree that assessment of other anatomic features associated with foveal development would be important to examine. With regard to the foveal avascular zone, OCT angiography is not yet available to us at the bedside and may not be practical for imaging nonsedated infants in the near future owing to motion artifact related to the lack of fixation. For the purposes of this study, fluorescein angiography is not likely to add much information on foveal development, because the resolution from handheld imaging probes cannot adequately visualize the foveal microvasculature.

As the authors point out, it is unknown whether rapid outer retinal thickening is beneficial or detrimental. We agree it would be of interest to follow these patients longitudinally to obtain more clinical data to determine if either delayed or rapid development has a clinical effect on visual function. Certainly, we encourage similar parallel studies as the ROP demographics vary based on geography and clinical setting.

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Re: Hoogewoud et al.: Prognostic factors in syphilitic uveitis (*Ophthalmology*. 2017;124:1808-1816)

TO THE EDITOR: We read with interest the study by Hoogewoud et al.[1] The authors conducted a retrospective multicenter analysis