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Letters to the Editor

What is the optimal dosage for intravitreal bevacizumab for retinopathy of prematurity?

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Editor,

More and more clinics use intravitreal bevacizumab for the treatment of retinopathy of prematurity (ROP). There are many concerns regarding the possible ocular and systemic side effects of this medication. In the BEAT-ROP study, a dosage of 0.625 mg was recommended, but a rationale for this dosage was not given (Mintz-Hittner et al. 2011). A lower dosage of bevacizumab might decrease the risk of the side effects after bevacizumab therapy.

To find a rationale for an optimal dosage for intravitreal injection of bevacizumab in ROP neonate, we reviewed the literature and performed a calculation of the size of the newborn eye.

The axial length of a neonate with a gestational age of 34 weeks is 16 mm (Ehlers et al. 1968). Using the formula $4/3*\pi*r^3$, the result is that the neonates eye is 3.12 times smaller than the adults eye. The length of the vitreous of a newborn is 10.48 mm, and the length of the vitreous of an adult is 15.0 mm (Larsen 1971). Using the same formula, the neonate eye is calculated to be 2.91 times smaller than the adult's eye. Taken both calculations together, the neonate's eye is approximately one-third smaller than the adult's eye. The volume of the neonate's vitreous may be even smaller than calculated because of the big size of the neonate's lens.

The usual bevacizumab dosage of an adult is 1.25 mg. The recommended dosage for ROP newborn is 0.625 mg (Mintz-Hittner et al. 2011). According to our calculations, however, the size-adjusted dosage of a neonate should be 0.4 mg.

This rationale is confirmed by recent studies which demonstrate that a dosage of 0.312 mg/0.025 ml showed good anatomical and functional results in ROP neonates (Harder et al. 2011; Lorenz 2011; Spandau et al. 2012). The practical disadvantage of the 0.312 mg dose is that it has to be diluted, in contrast to the 0.625 mg dose that requires no dilution.

These results indicate that a much lower dosage than recommended in the BEAT-ROP study could be sufficient to treat ROP. Further dosage dependency studies are warranted to establish the optimal dosage for intravitreal treatment of ROP.

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Effects of repeated intravitreal bevacizumab injections on the inner retinal function in neovascular age-related macular degeneration

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To the editor,

As bevacizumab is becoming widely used for off-label therapy, the major concern regarding the intravitreal use of bevacizumab is its toxicity to intraocular tissues such as the neural retina. Recent electrophysiological and histopathological studies reported that the intravitreal injection of bevacizumab in the usual therapeutic dosages has little or no global toxicity to the retina (Maturi et al. 2006; Shahar et al. 2006; Pedersen et al. 2010).

We assessed the alteration of the inner retinal function using photopic negative response (PhNR) in patients with neovascular age-related macular degeneration (AMD) treated after repeated bevacizumab injection. Photopic negative response is a slow negative potential that occurs after the positive b-wave of the electroretinogram (ERG) and is thought to originate from the retinal ganglion cells and inner retina.

Thirty patients (30 eyes) with neovascular AMD treated with three-time 6-week scheduled intravitreal bevacizumab injections (1.25 mg/0.05 mg) from March 2009 to October 2010 participated in our study. We performed complete ophthalmic examinations and recording of the full-field ERG and PhNR before the treatment, 4 weeks after each intravitreal bevacizumab injection and 6 months after the first injection. Full-field ERG and PhNR were recorded using the UTAS-E3000® system (LKC Technologies, Inc., Gaithersburg, MD, USA). Additionally, the ratio of PhNR amplitude to the b-wave (PhNR/b-wave ratio) was also evaluated to reduce the variations in PhNR amplitude among the individuals. We compared the full-field ERG and PhNR

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