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Letter to Editor

The History and Efficacy of Intravitreal Injection of Pegaptanib in Patients With Macular Edema Secondary to Branch Retinal Vein Occlusion; The Need for Special Attention

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We have read a recent article about intravitreal pharmacotherapy for the treatment of macular edema secondary to branch retinal vein occlusion (BRVO) with great interest. You have mentioned that few studies have evaluated the efficacy of pegaptanib in ocular diseases; thus, discussing this the Food and Drug Administration (FDA)-approved drug is necessary.

Anti-VEGF therapy is a critical and potent approach for the management of macular edema. Anti-VEGF agents neither cause ruined alterations as lasers do, nor induce cataract formation as steroids do.[1]

Despite the controversy in choosing the best option for treatment such as multi-drug or mono-drug therapy, drugs and their efficacy must be investigated and compared. Pegaptanib sodium is a new drug approved by the FDA in 2004 for the treatment of age-related macular degeneration (AMD).[2]

Pegaptanib is a pegylated ribonucleotide aptamer (single strand of nucleic acid) that binds to $VEGF_{165}$ (main isoform related to angiogenesis and macular edema) specifically and, fortunately, does not block isoforms with a necessary role in the normal recovery of retinal cells after ischemia.[3]

The history of pegaptanib used in humans began with three phases of clinical trials. The first phase was conducted on 15 patients with the wet type of AMD and achieved 80% improvement.[4] The second phase was on 21 patients with subfoveal choroidal neovascularization (CNV) secondary to AMD, and the outcome was brilliant; 87.5% of patients achieved improvement by using pegaptanib compared with 50.5% improvement in patents using a photodynamic therapy (PDT) method.[4] In a study with a larger sample size, 1186 patients with wet AMD showed 73% improvement in the first year.[5]

Pegaptanib is not FDA approved for BRVO yet. Anti-VEGF drugs revolutionized the treatment of eyes suffering macular edema secondary to BRVO, and this result necessitates the further study of pegaptanib monotherapy or in combination with other effective agents.

It would be useful to study more intensely RNA silencing (siRNA) with drugs like bevasiranib which inhibits VEGF synthesis through a post-transcriptional mechanism, multi-tyrosine kinase inhibitors like sunitinib which blocks the activating signal of VEGF receptors, and the effects of peroxisome proliferator-activated receptor gamma agonists like rosiglitazone on macular edema due to BRVO.[6]

Today, anti-VEGF therapy is a frequently applied treatment modality, especially in ophthalmology. Because of the broad indications for their benefits, researchers are still looking for new pharmaceutical products with better pharmacokinetics and targeted delivery systems.

Authors' Contributions

RA and SNS contributed equally to this study.

Conflict of Interest Disclosures

None.

Ethical Approval

Not applicable.

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