

Treating eye diseases with anti-VEGF therapies may have side effects

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A new *Investigative Ophthalmology & Visual Science* (IOVS) article reveals that increasingly aggressive therapies that block VEGF could cause damage in treating eye diseases. Scientists discovered inhibiting anti-VEGF might have a harmful effect on the tissue responsible for producing the fluid that bathes the eye, medically termed the ciliary body.

"Very little is known about the factors that regulate the integrity and function of this tissue [the ciliary body] in the adult," said author Patricia A. D'Amore, PhD, of Schepens Eye Research Institute/Massachusetts Eye and Ear. "Our finding indicates that VEGF-A is at least one of the molecules that play a role in keeping the ciliary body healthy and functioning properly."

In the study, *Expression and role of VEGF-A in the Ciliary Body*, investigators simulated the VEGF-A activity in adult mice and found that blocking the protein decreased the intraocular pressure, an unexpected side effect that impaired the ciliary body.

Several anti-VEGF-A therapies are currently being widely and successfully used for the treatment of eye diseases like wet macular degeneration, diabetic macular edema and retinopathy of prematurity. D'Amore agrees that there is no evidence to indicate that the manner in which these drugs are being administered interferes with the ciliary body. "However, there is a move toward developing methods to continuously deliver anti-VEGF to the eye and to have drugs that are

more potent inhibitors of VEGF," she said. "I would be concerned that more aggressive VEGF inhibition in the eye would have deleterious effects on the ciliary body."

The research team's investigation of anti-VEGF-A on the ciliary body was the result of prior studies that found blocking VEGF can lead to the degeneration of capillary beds, particularly capillaries that have specializations called fenestrations like the ones found in the ciliary body. These include whole body VEGF blockade in anti-cancer therapies that damage the capillaries of the kidney and the effect anti-VEGF has had on the thyroid function in people treated locally for brain tumors.

The results of the new IOVS study suggest further research, including clinical trials, should be considered. "I am hoping that revealing the possible negative side effects of VEGF inhibition in the eye will motivate research into new ways to block edema and blood vessel growth in the eye that does not require continuous inhibition of intraocular VEGF," said D'Amore.

Provided by Association for Research in Vision and Ophthalmology

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