

Cancer drug offers more affordable treatment for diabetic retinopathy

Treatment for diabetic retinopathy can be expensive, especially in low and middle-income countries such as South Africa, but a recent doctoral study at Stellenbosch University (SU) found that a relatively cheap drug called bevacizumab could be effective.



Jose Fernando Arevalo

“We found that injecting bevacizumab into the eyes could help treat diabetic eye disease and prevent blindness in people living in low and middle-income countries,” says Dr Jose Fernando Arevalo, chairperson of the Department of Ophthalmology at the Bayview Medical Center in the Wilmer Eye Institute at the Johns Hopkins University School of Medicine in Baltimore in America.

Arevalo, who is also the president of the Pan-American Association of Ophthalmology, obtained his doctorate in ophthalmology at the second ceremony of SU’s December graduation.

He says the rapid increase in the prevalence of diabetes means that by 2040 more people will be at risk of developing diabetic eye disease and therefore less expensive ways need to be found to treat the condition. Diabetic eye disease affects both people with Type 1 and Type 2 diabetes. It leads to a loss of vision caused primarily because of the build-up of fluid in the retina and the abnormal growth of blood vessels in the eye.

He says the aim of the research was to determine if injections with bevacizumab, sold under the brand name Avastin, is helpful in the management of complications of diabetic eye disease in low and middle-income countries. Arevalo adds that people in many high-income countries are already benefitting from bevacizumab injections, and other more expensive drugs. Used as cancer therapy, bevacizumab is available in low and middle-income countries.

Study

In several multicentre studies conducted in 13 Latin American countries, Arevalo investigated the effectiveness of off-label injections of the drug as treatment for diabetic eye disease.

Arevalo says the research showed that “the injections, which has minimal side-effects, are effective against the build-up of fluid in the part of the retina crucial for sharp, detailed vision and the abnormal growth of blood vessels in the eye.”

“Bevacizumab also helps to curb the protein that stimulates the abnormal growth of blood vessels and causes small aneurysms and increased vascular leaks of fluid.”

“The study of 1,265 patients who received 4,303 eye injections of 1.25 mg or 2.5 mg of bevacizumab has shown that this procedure appears to be safe. Nowadays, only the lower dose of 1.25 mg is recommended.”

Arevalo adds that primary injections seem to provide stability or improvement in the clarity or sharpness of vision, by reducing the build-up of fluids measured by a scan of the retinal layers and a dye test of the retinal vessels.

Extreme care must, however, be taken in using a dose of 2.5 mg or more of bevacizumab as it can cause or worsen retinal detachment in advance cases of diabetic eye disease, says Arevalo.

He mentions that they have also demonstrated the usefulness of using pre-operative bevacizumab injections during minimal invasive surgery performed to remove fluid from the eye in patients where scar tissue on the retina has pulled it away from the layer underneath.

In instances where eye surgery is needed, physicians should perform it preferably before five days after the application of bevacizumab injections and immediately on those patients in whom tractional retinal detachment occurs.

“We recommend less than five days after injections as more than 80% of the retinal detachments developed after that period of time. The injection can cause retinal detachments in 3.2% of the cases of very advance disease that needs surgical intervention. However, patients’ vision improve after a less complicated surgery thanks to the use of bevacizumab.”

Affordability

In terms of affordability, Arevalo says people in low and middle-income countries would have easy access to bevacizumab.

“Becavizumab is much cheaper per dose and more accessible compared to similar drugs on the market. A 4-ml vial containing 100 mg has a wholesale acquisition cost of \$550 whereas other available drugs that are between \$1,500 and \$2,000 per dose. About 40-80 dosages (0.05 mL each) of bevacizumab injections can be prepared with one vial lowering the cost per treatment significantly.”

Source: Stellenbosch University