



Research Article

Anti-VEGF drugs compared with laser photocoagulation for the treatment of proliferative diabetic retinopathy: a systematic review and individual participant data meta-analysis

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Plain language summary

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People with diabetes are at risk of gradually losing their sight because blood vessels in the part of the eye called the retina may become damaged. This condition is called diabetic retinopathy. People with a more severe type of retinopathy, called proliferative diabetic retinopathy are usually offered laser treatment to reduce the risk of further sight loss. Recently, drugs called anti-vascular endothelial growth factors, which are injected directly into the eye, have been used to treat other eye conditions, and might be useful to treat retinopathy.

This paper investigates whether anti-vascular endothelial growth factor therapy is effective by identifying and reanalysing the clinical trials that used the three main anti-vascular endothelial growth factor drugs (called aflibercept, bevacizumab and ranibizumab) to treat proliferative diabetic retinopathy. We identified 12 relevant clinical trials, including approximately 1100 persons, and obtained and reanalysed the data from three of the trials.

We found that, after 1 year, people with proliferative retinopathy who received anti-vascular endothelial growth factor injections could, on average, read three or four more letters on a standard eye test chart than people who had received laser therapy. This difference may be too small to make anti-vascular endothelial growth factor injections worthwhile. The benefit of anti-vascular endothelial growth factor injections may also decline over time. Anti-vascular endothelial growth factor injections may be more beneficial in people with poorer vision when treatment starts.

We also found that people who received anti-vascular endothelial growth factor injections were substantially less likely to experience some of the more severe consequences of vision loss, including where vision is lost in the centre of the eye (called diabetic macular oedema), and where blood leaks into the eye (called vitreous haemorrhage).

The long-term impact of using anti-vascular endothelial growth factor injections repeatedly is still not well understood and requires further clinical research. Further trials that treat people with poorer vision or health generally would be useful.