

Review: Photodynamic therapy prevents vision loss in neovascular age-related macular degeneration

Wormald R, Evans J, Smeeth L. Photodynamic therapy for neovascular age-related macular degeneration. *Cochrane Database Syst Rev.* 2000;(2):CD002030 (latest version 22 Feb 2000).

QUESTION

In patients with neovascular age-related macular degeneration (ARMD), what is the effectiveness of photodynamic therapy?

DATA SOURCES

Studies were identified by searching the Cochrane Controlled Trials Register, MEDLINE (1966 to October 1999), and EMBASE/Excerpta Medica (1980 to September 1999) with terms related to macular or retinal degeneration, choroidal neovascularization (CNV), photodynamic therapy, and verteporfin; scanning the references of relevant studies; using *Science Citation Index* to identify reports citing relevant studies; and contacting experts in the field.

STUDY SELECTION

Studies were selected if they were randomized controlled trials that compared photodynamic therapy with another treatment, placebo, or no treatment in patients with neovascular ARMD.

DATA EXTRACTION

Data were extracted on study quality, study design, patient characteristics, intervention, follow-up, and outcomes.

MAIN RESULTS

Of 76 identified studies, 1 trial met the inclusion criteria (609 patients, mean age 75 y). Follow-up was 94%, and the study quality was high. Patients in 22 ophthalmologic practices in Europe and North America received verteporfin, 6 mg/m² of body surface area ($n = 402$), or placebo ($n = 207$) by intravenous infusion over 10 minutes. After 15 minutes, all patients received 83 seconds of laser light. Patients were reviewed every 3 months, and if a recurrence or a persistence of the previous lesion was present, then therapy was repeated. A mean of 3.4 treatments were given to the verteporfin group and 3.7 to the placebo group. At 12 months, the loss of visual acuity was lower in patients who received verteporfin than in patients who received placebo ($P < 0.001$ for loss of ≥ 3

lines, $P = 0.006$ for loss of ≥ 6 lines of visual acuity)* (Table). Patients with no occult CNV had greater benefit from photodynamic therapy than did patients with occult CNV (number needed to treat to prevent 1 additional patient with no occult CNV from losing ≥ 3 lines of vision was 2, 95% CI 2 to 4).

CONCLUSION

In patients with neovascular age-related macular degeneration, photodynamic therapy reduces the risk for vision loss.

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For correspondence: Mr. R. Wormald, "Glaxo" Department of Ophthalmic Epidemiology, Institute of Ophthalmology (UCL) and Moorfields Eye Hospital, City Road, London EC1V 2PD, England, UK. FAX 44-207-608-6925. ■

* P values calculated from data in article.

Photodynamic therapy with verteporfin vs placebo for neovascular age-related macular degeneration (1 trial)†

Outcomes at 12 mo	Verteporfin	Placebo	RRR (95% CI)	NNT (CI)
Loss of ≥ 3 lines of visual acuity	39%	54%	28% (14 to 39)	7 (5 to 15)
Loss of ≥ 6 lines of visual acuity	15%	24%	38% (13 to 56)	12 (7 to 50)

†Abbreviations defined in Glossary.

COMMENTARY

Photodynamic therapy is an exciting development in the management of patients with ARMD. The prevalence of this condition is estimated at 2.2% of persons > 65 years of age (1), and it is the most common diagnosis for those registered as blind. ARMD is a group of disorders of the macular area of the retina, and photodynamic therapy is appropriate for only a few patients. For those with atrophic (dry) ARMD and those with scarred CNV membranes, management consists of reassuring the patient that vision loss is limited to the center and supplying low-vision aids. A few patients with scarred CNV membranes are treatable by confluent argon-laser photocoagulation. No other treatment has been shown to be effective for patients with ARMD (1).

This review of a single study shows promise in the use of photodynamic therapy for CNV membranes and concludes that treatment is only of value when the membranes are "classical" on fluorescein angiography with little or no obscured or "occult" membrane. These patients are, unfortunately, the minority. Further studies are needed to discover the effectiveness of photodynamic therapy in patients with symptomatic occult membranes.

Results from this study are only available for the first 12 months after initial treatment. No information is available about the long-term control of CNV membranes and the possible effects of repeated exposure to photodynamic therapy.

Loss of central vision from ARMD has a major social effect for patients, and the use of photodynamic therapy offers hope. Selecting patients who will benefit from photodynamic therapy requires skilled interpretation of fluorescein angiograms. The visual benefit for patients requires further study because outcomes are measured in terms of the number of lost lines of visual acuity rather than effect on daily life.

*Michael Nelson, MBChB, MEd
Central Sheffield University Hospital
Sheffield, England, UK*

Reference

- Royal College of Ophthalmologists. Age related macular degeneration. Guidelines. London: Royal College of Ophthalmologists; February 2000 (rcophth.ac.uk/publications/guidelines/armd.html).