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Medical Policy Manual

Topic: Intraocular Radiation Therapy for Age-Related Macular Degeneration

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Section: Medicine

Last Reviewed Date: June 2014

Policy No: 134

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IMPORTANT REMINDER

Medical Policies are developed to provide guidance for members and providers regarding coverage in accordance with contract terms. Benefit determinations are based in all cases on the applicable contract language. To the extent there may be any conflict between the Medical Policy and contract language, the contract language takes precedence.

PLEASE NOTE: Contracts exclude from coverage, among other things, services or procedures that are considered investigational or cosmetic. Providers may bill members for services or procedures that are considered investigational or cosmetic. Providers are encouraged to inform members before rendering such services that the members are likely to be financially responsible for the cost of these services.

DESCRIPTION

Epiretinal radiation describes the intraocular administration of radiation to the choroidal vascular bed of the retina to treat age-related macular degeneration (AMD).

Background

Age-related macular degeneration (AMD) is characterized in its earliest stages by minimal visual impairment and the presence of large drusen and other pigmentary abnormalities on ophthalmoscopic examination. Two distinctively different forms of degeneration may be observed. The first, called the atrophic or areolar or dry form, evolves slowly. Atrophic AMD is the most common form of degeneration and may be a precursor of the more visually impairing exudative neovascular form, also referred to as disciform or wet AMD. The wet form is distinguished from the atrophic form by the development of choroidal neovascularization (CNV) and serous or hemorrhagic detachment of the retinal pigment epithelium. Risk of developing severe irreversible loss of vision is greatly increased by the presence of CNV.

Regulatory Status

An investigational device exemption has been granted by FDA for a phase III multicenter trial to provide data for application to the FDA; to be used in clinical trials. The NeoVista Epi-Rad90™ Ophthalmic System has been developed to treat CNV by focal delivery of radiation to a subfoveal choroidal neovascular lesion. Using a standard vitrectomy procedure, the cannula tip of a handheld (pipette-like) surgical device is inserted into the vitreous cavity and positioned under visual guidance over the target lesion. The radiation source (strontium-90) is advanced down the cannula until it reaches the tip, which is then held in place over the lesion for a "prescribed" time to deliver focused radiation. The system is designed to deliver a one-time peak dose of beta particle energy (24 Gy) for a target area 3 mm in depth and up to 5.4 mm in diameter. This is believed to be below the dose that is toxic to the retina and optic nerve, and radiation exposure outside of the target area is expected to be minimal.

NOTE: Proton beam therapy and stereotactic radiation therapy for choroidal neovascularization (CNV) are considered in separate medical policies. See cross-reference section below.

MEDICAL POLICY CRITERIA

Epiretinal radiation therapy for the treatment of subfoveal choroidal neovascularization in patients with neovascular age-related macular degeneration is considered **investigational**.

SCIENTIFIC EVIDENCE[1,2]

Evidence from randomized controlled trials (RCTs) comparing patients treated with epiretinal radiation therapy with those receiving standard treatment (such as treatment with anti–vascular endothelial growth factors) is necessary in order to establish the safety and efficacy of epiretinal radiation in the treatment of wet age-related macular degeneration (AMD).

Literature Appraisal

Epi-Rad90™ Brachytherapy

Randomized Controlled Trials (RCTs)

Several recent RCTs were identified that evaluated the effectiveness of epiretinal radiation therapy in the treatment of AMD. However, there were no RCTs identified that concluded that epiretinal radiation therapy was beneficial.

- Authors evaluated the safety and efficacy of epimacular brachytherapy (EMBT) for the treatment of neovascular AMD[3] using results from the CABERNET study. In a multicenter, randomized, active-controlled, phase III clinical trial, 494 patients with treatment-naïve neovascular AMD were identified and included in the study. Authors concluded the 2-year efficacy study did not support the routine use of EMBT for treatment-naïve wet AMD, despite an acceptable safety profile. Authors suggested that further safety review is required. Using the same patient data set from the CABERNET study, authors reported the fluorescein angiography (FA) and optical coherence tomography (OCT) results of a clinical trial of EMBT used for the treatment of neovascular AMD.[4] Authors concluded that both FA and OCT suggested that EMBT with pro re nata (PRN) ranibizumab results in an inferior structural outcome than quarterly plus PRN

ranibizumab. Authors suggested that a non-vision-threatening radiation retinopathy occurs in 2.9% of eyes over 24 months, but longer follow-up is needed.

Nonrandomized Studies

- Twelve- and 24-month results from the multicenter MERITAGE study (NCT00809419) were reported in 2012 and 2013.[5-7] MERITAGE was a Phase I/II study of the EPI-RAD90™ for the treatment of subfoveal CNV associated with wet AMD in patients requiring continued anti-VEGF therapy to maintain an adequate response. Following a single 24-Gy dose, the 53 patients in the study received retreatment with ranibizumab administered monthly (as needed). At 12-month follow-up, 81% of patients maintained stable vision (loss of fewer than 15 letters) with a mean of 3.49 anti-VEGF injections (0.29 per month). This was compared with 0.45 injections per participant per month in the 12 months before the study. Over 24 months, 68% of patients maintained stable vision with a mean of 8.7 anti-VEGF injections (0.72 per month), which was not less than the number of injections required in the 12 months before treatment.

- Three publications from 2 studies have been reported by Avila et al on epiretinal radiation using the EPI-RAD90™ system.[8-10] One report described 12-month safety and visual acuity results of a feasibility study in 34 treatment-naïve patients recruited between February 2005 and February 2006.[10] The second report described 12-month safety and visual acuity results from 24-Gy epiretinal radiation combined with bevacizumab in 34 treatment-naïve patients enrolled between June 2006 and April 2007.[9] Adverse events related to the device or procedure included subretinal hemorrhage (n=1), retinal tear (n=1), subretinal fibrosis (n=2), epiretinal membrane (n=1), and cataract (6 of 24; 24 patients were phakic at baseline). All occurrences of cataracts were deemed to be related to the vitrectomy procedure. Two- and 3-year results from this trial were published in 2012.[8] All 34 subjects were followed up for 24 months; 1 site that enrolled 19 patients agreed to reconsent and follow-up the patients for 3 years. On average, the cohort of subjects followed for 36 months received 3.0 bevacizumab injections.

  Twelve of the 24 phakic patients (50%) developed cataracts, and 4 had phacoemulsification with intraocular lens implantation. The mean change in visual acuity at 36 months was +3.9 letters. Seven of 13 phakic patients (54%) developed cataracts, and 4 had phacoemulsification with intraocular lens implantation. One case of nonproliferative radiation retinopathy was observed at 36 months of follow-up.

Conclusion

While these studies contribute to the body of knowledge on epiretinal radiation by providing direction for future research, the evidence from these studies do not permit conclusions due to methodological limitations, including non-random allocation of treatment and a lack of adequate comparison group. Lack of adequate control groups limits the ability to control for many types of bias that may influence treatment outcomes.

Clinical Practice Guidelines

Currently there are no clinical practice guidelines that recommend intraocular placement of a radiation source for the treatment of AMD.

Summary

The evidence is not sufficient to permit conclusions about the benefits of epiretinal radiation therapy for the treatment of wet age-related macular degeneration (AMD). Current evidence is limited and failed to demonstrate the safety and efficacy of epiretinal radiation therapyin the treatment of wet AMD. In the absence of such evidence, it cannot be determined whether epiretinal radiation therapy offers any additional benefit compared to standard treatment, such as treatment with anti–vascular endothelial growth factors. In addition, no devices for epiretinal radiation have been cleared by the U.S. Food and Drug Administration. Therefore, epiretinal radiation therapy is considered investigational for treatment of wet AMD.

REFERENCES

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2. National Institute for Health and Clinical Excellence (NICE). Ranibizumab and pegaptanib for the treatment of age-related macular degeneration. London (UK): National Institute for Health and Clinical Excellence (NICE); 2008 Aug. 43 p. (Technology appraisal guidance; no. 155). [cited 09/29/2009]; Available from: http://www.guideline.gov/summary/summary.aspx?doc_id=13019&nbr=006713&string=neovascular+AND+AMD
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10. Avila, MP, Farah, ME, Santos, A, et al. Twelve-month safety and visual acuity results from a feasibility study of intraocular, epiretinal radiation therapy for the treatment of subfoveal CNV secondary to AMD. *Retina*. 2009 Feb;29(2):157-69. PMID: 19202425

CROSS REFERENCES

Transpupillary Thermotherapy for Treatment of Choroidal Neovascularization, Surgery, Policy No. 120

Charged-Particle (Proton or Helium Ion) Radiation Therapy, Medicine, Policy No. 49

Stereotactic Radiosurgery and Stereotactic Body Radiation Therapy, Surgery Policy No. 16

CODES	NUMBER	DESCRIPTION
CPT	0190T	Placement of intraocular radiation source applicator (List separately in addition to primary procedure) Note: 0190T differs from code 67218 (destruction of localized lesion of the retina (e.g., macular edema, tumors), one or more sessions; radiation by implantation of source) because the radiation source is not implanted.
	67036	Vitrectomy, mechanical, pars plana approach Note: 0190T is to be used in conjunction with 67036
HCPCS	None	