Treatments for Macular Edema in Patients with Uveitis

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Conflict of Interest

- Grant funding from Regeneron for Anti-VEGF therapy in Radiation Retinopathy

The Problem

57 year old woman with intermediate uveitis
VA = 20/80 OU
The Problem

- Chronic inflammation leads to break down of the blood-retina barrier
- Development of Macular Edema
- Temporary but if chronic may become permanent
Long-Term Clinical Outcome and Causes of Vision Loss in Patients with Uveitis

- Acetazolamide
- Carbonic Anhydrase Inhibitors
- Methotrexate
- Interferon
- Biologics
- Anti-VEGF
- Mycophenolate mofetil
- Vitrectomy
- Steroids
Options - Acetazolamide

- Carbonic Anhydrase Inhibitor
- Type IV, membrane bound, apical region of RPE cells
- May reduce leakage from RPE

Options - Methotrexate

- Blocks purine nucleotide and thymidilate synthesis
- Interrupts DNA replication, down regulates inflammatory cytokines
- Systemic or Intravitreal

Options - Interferon-α

- Produced by all somatic cells, involved in antiviral, anti proliferative, antiangiogenic, immunomodulatory effects
- May have both supportive and suppressive actions
Options - Biologics

- Elevated levels intraocular levels of TNF in uveitis
  - Adalimumab, Infliximab
  - Intravitreally - small series, some with increased inflammation with infliximab in DME/AMD pts

Options - Anti-VEGF

- 2001 - Fine et al. demonstrated elevated VEGF in aqueous of pts with CME
- Bevacizumab, Ranibizumab, Pegaptanib

Options - Mycofenolate mofetil

- Blocks purine synthesis in T lymphocytes
- Interrupts DNA replication, down regulates inflammatory cytokines
- Dose dependent photo receptor damage with intravitreal injections
Options - Pars Plana Vitrectomy

- Surgical procedure with known risks

Options - Corticosteroids

- Corticosteroids - control inflammatory mediators, leukotriene/prostaglandin/cell adhesion/major histocompatibility molecules/decrease VEGF

Options - Corticosteroids

- Systemic
  - Oral
  - Short and Long Term Side Effects
Options - Corticosteroids

- Periocular
  - May allow higher concentration of medication to macula/retina
  - Complications:
    - Globe injury, Fat Atrophy, Optic Nerve Injury, Retina Vascular Occlusions

Options - Corticosteroids

- Intravitreal Triamcinolone
  - Local Side Effects: Glaucoma, Cataract Progression Common
  - Systemic Side Effects: minimal
  - Short Acting: 2-3 months

Options - Corticosteroids

- Sustained Release Implants
  - Dexamethasone Implant
  - Fluocinolone Implant
Options - Corticosteroids

- Sustained Release Implants
  - Dexamethasone implant
  - Injected in office procedure
  - 3-6 month duration
  - Biodegradable material mixed with 0.7 mg dexamethasone to form rod-shaped implant

Evidence

- Randomized Clinical Trial Data
  - Scarce, may be disease-specific
- Meta-analysis data
  - Needed to pool data regarding the complication of essentially a rare disease
CONCLUSION: The results from randomized controlled trials with long follow-up periods are needed for a firm conclusion on the long-term benefit of different treatments. The only intervention with a definite role is macular grid laser photocoagulation for high-risk choroidal neovascularization, which is shown to be effective in preventing visual loss in eyes with choroidal neovascularization, and hence improving the visual outcome of AMD. However, the long-term effects of other interventions on visual outcome in AMD, such as anti-VEGF treatments, need to be evaluated in ongoing studies.

In conclusion, the management of AMD is evolving, and future research should focus on identifying effective treatments that can delay the progression of the disease and improve visual outcomes. The role of vision rehabilitation and other supportive interventions in the management of AMD is also important and needs further investigation. It is crucial to provide patients with accurate information about their disease and the available treatment options, enabling them to make informed decisions about their care.
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