Anti-inflammatory Eye Preparations

This article provides an overview of anti-inflammatory agents used for eye conditions. Check individual drug monographs for a more comprehensive account of drug characteristics. At the end, you will find guidance regarding prescription of these agents in the primary care setting. See also the separate article on Eye Drugs - Prescribing and Administering.

Overview

There are four broad categories of ophthalmic anti-inflammatory preparations:

- Corticosteroids
- Antihistamines
- Mast cell stabilisers
- Non-steroidal anti-inflammatory drugs (NSAIDs)

In the primary care setting, topical agents are most commonly used, with the marked exception of suspected giant cell arteritis (temporal arteritis) where systemic steroids may need to be initiated promptly prior to urgent specialist review. In a specialist unit, anti-inflammatory agents (typically steroids) can be injected in the sub-Tenon's space and within the globe.

Common conditions warranting anti-inflammatory treatment include allergic conjunctivitis and hypersensitivity reactions. These drugs are also very commonly used in specialist units to treat a very wide range of conditions. These include uveitis, cystoid macular oedema, scleritis and episcleritis, and certain cases of herpes simplex keratitis, during and after surgical procedures.

Topical corticosteroids

Overview

- **Examples** - betamethasone, dexamethasone, fluoromethalone, hydrocortisone acetate, prednisolone, rimexolone, loteprednol etabonate.
- **Use** - short-term treatment of local inflammation, usually in the anterior segment of the eye. This includes inflammation post-surgery.
- **Action** [1] - decrease number and function of inflammatory cells, increase vascular permeability and inhibit chemical mediators of inflammation.
- **Contra-indications** - undiagnosed red eye; they can aggravate herpes virus and other infections.
- **Caution** - prescription and monitoring need to be done in a specialist unit.
- **Administration** - largely depends on the condition: may be as frequent as every 30 minutes in severe inflammatory states. There is then a gradual reduction over time (again, this depends on the condition) according to symptoms and clinical findings. Period of reduction may be weeks or even months, with a small minority of patients being kept on very low doses of weak steroids for extended periods of time (years) to prevent recurrence.
- **Ocular side-effects** - a rise in intraocular pressure (may be insidious or rapid: 'steroid responders'), cataract formation in long-term use, corneal thinning, delay in corneal healing, increased susceptibility to microbial infections and a paradoxical uveitis.
- **Systemic side-effects** - theoretical but be aware of susceptible individuals (pregnancy, peptic ulcer disease, tuberculosis, active infection, psychosis).
- **Additional information** - in severe inflammatory states, a local injection of steroids around the globe can be performed by ophthalmologists.

hands.

Corticosteroid/antibiotic combinations [2]

- **Examples** - betamethasone + neomycin, dexamethasone 0.1% + neomycin/polymyxin B/tobramycin, dexamethasone 0.05% + framycetin/gramicidin, prednisolone 0.5% + neomycin.
- **Use** - where there is inflammation associated with a risk or actual infection - eg, following routine cataract surgery. Initiation of these drugs is not recommended in the primary care setting.

Corticosteroids available in Minims®

- **Examples** - dexamethasone and 0.5% prednisolone.
- **Use** - these are single-use application packs used where there is preservative toxicity.

Antihistamines

- **Examples** - antazoline sulfate, azelastine hydrochloride, olopatadine, epinastine hydrochloride, ketotifen.
- **Use** - allergic conjunctivitis, seasonal and perennial conjunctivitis. [3]
- **Action** - they inhibit histamine-mediated inflammatory responses.
- **Caution** - some agents are not licensed for young children, there can be rebound vasodilation after prolonged use, [4] severe renal impairment, pregnancy and breast-feeding.
- **Administration** - most preparations twice-daily until cessation of symptoms.
- **Ocular side-effects** - local irritation and stinging are possible, visual disturbances, keratitis, oedema, photophobia.
- **Systemic side-effects** - (rare): headache, pruritus and skin reactions, drowsiness and dry mouth reported.
- **Additional information** - these drugs act quickly but consider oral antihistamines if symptoms are severe or not limited to the eye. They may be used concurrently with a mast cell stabiliser (ketotifen has mast cell stabilising properties too). Antazoline preparations are available over-the-counter (OTC). [3]

Mast cell stabilisers

- **Examples** - lodoxamide, nedocromil sodium, emedastine, sodium cromoglicate.
- **Use** - allergic, seasonal and vernal conjunctivitis. [3]
- **Action** [1] - stabilise mast cell membranes; therefore, these drugs have a more prophylactic role, as they are administered before mast cell priming with IgE and allergens.
- **Caution** - some agents not licensed for young children (check individual drug), pregnancy and breast-feeding.
- **Contra-indication** - soft contact lens wear.
- **Administration** - most preparations are applied four times daily for a maximum of 12-16 weeks.
- **Ocular side-effects** - transient local irritation and stinging possible, dry eye, keratitis, lacrimation, corneal infiltrates, staining and localised oedema.
- **Systemic side-effects** - headache, dizziness and taste disturbance.
- **Additional information** - may be used concurrently with antihistamines. Sodium cromoglicate preparations are available OTC.

Non-steroidal anti-inflammatory drugs

- **Examples** - diclofenac, ketorolac, flurbiprofen sodium, nepafenac.
- **Use** - postoperative inflammation in cataract surgery (eg, macular oedema), pain after accidental or surgical corneal trauma. Diclofenac also has a role in seasonal allergic conjunctivitis.
- **Action** [1] - inhibit the synthesis of eicosanoids (prostaglandins, thromboxanes and leukotrienes).
- **Caution** - some agents not licensed for young children (check individual medication), rebound vasodilation after prolonged use, [4] pregnancy and breast-feeding.

Prescribing anti-inflammatories in primary care[3]

- Rule out worrying causes of a red eye.
- Prescribe a mast cell stabiliser for prophylaxis.
- Prescribe antihistamine drops for acute relief of symptoms (possibly systemic antihistamines if nose and sinuses are affected too).
- Cool compresses over the eyes can also help with symptom relief.
- Advise to return to the surgery should symptoms not respond or if they worsen.

Do not prescribe topical steroids unless following a management plan agreed with the local ophthalmology team.

Further reading & references

- British National Formulary

1. Forrester JV, Dick AD, McMenamin PG, Lee WR; The Eye: Basic Sciences in Practice (3rd ed.) 2007, WB Saunders
2. Denniston AKO, Murray PI; Oxford Handbook of Ophthalmology (OUP), 2009
3. Conjunctivitis - allergic; NICE CKS, August 2012
4. The Wills Eye Manual (6th ed), 2012

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