

are chronic but do not require treatment. However, the majority of patients with chronic ocular inflammation will benefit from sustained suppression of inflammation.

Corticosteroids are the most effective agents to control ocular inflammation quickly. Drug route and dose are tailored to each patient depending on disease severity and the duration of and response to therapy. Additional factors to consider when choosing a corticosteroid are the presence of systemic disease and the patient's age, weight, immune status, and tolerance of adverse effects. It is common practice to use systemic immunomodulatory therapy (IMT) to decrease or stop corticosteroids. In the appropriate clinical scenario, cycloplegic agents, nonsteroidal anti-inflammatory drugs (NSAIDs), fibrinolytic agents, and carbonic anhydrase inhibitors may also be used as adjunctive therapy.

The remainder of this chapter offers a detailed discussion of corticosteroids and systemic IMT for the management of uveitis.

TREATMENT OF NONINFECTIOUS OCULAR INFLAMMATORY DISEASE

The basic principles of treatment of noninfectious ocular inflammatory disease are summarized as follows:

1. The absence of infection should be confirmed.
2. The inflammation is quieted with some form of corticosteroids. If inflammation worsens, an infectious etiology should be reconsidered.
3. Corticosteroids are slowly tapered off completely or down to a medically safe dose.*
4. If inflammation recurs upon corticosteroid taper, a longer-acting or stronger option is indicated:
 - For example, if topical corticosteroids are being used, a periocular, intravitreal, or systemic formulation can be considered.
 - When corticosteroids are maximized or cannot be continued, systemic corticosteroid-sparing immunomodulatory therapy (IMT) may be added.
5. Antimetabolites have historically been considered first-line treatment. In certain cases, a biologic agent (usually a tumor necrosis factor inhibitor) or, less likely, an alkylating agent, may be used first.
6. IMT takes time to achieve a therapeutic effect, and not every agent works in every situation. These factors should be considered in assessing efficacy. Adding or switching to another agent may be necessary. When effective and well tolerated, IMT is maintained for at least 1–3 years.
7. For certain ocular inflammatory diseases, especially those with systemic manifestations, IMT may be indicated as first-line treatment.

* A maximum of 7.5 mg/day oral prednisone, or a topical drug at a dose low enough to avoid ocular side effects.

Corticosteroids

Corticosteroids are often the first-line treatment for all forms of ocular inflammation as well as for complications such as macular edema. They may be administered locally (eg, as topical eyedrops or as periocular or intraocular injections) or systemically (eg, orally, intravenously, or less frequently, intramuscularly).

The corticosteroid dose, duration of therapy, and route of administration must be individualized. For maximum effect, corticosteroid therapy is usually started at a high dosage (ie, topical or systemic) and then tapered as the inflammation subsides, rather than initiated at a low dose that may have to be progressively increased to control inflammation. To minimize side effects, the maintenance dose should be the lowest amount necessary to control inflammation. If systemic corticosteroids are administered for more than 2 to 3 weeks, they must be tapered gradually (ie, over days to weeks) to prevent cortisol deficiency from hypothalamic–pituitary–adrenal axis suppression.

For uveitis that is not immediately vision threatening or chronic, corticosteroids are slowly tapered, and the disease is closely monitored. If inflammation recurs before a low corticosteroid dose is reached, then additional anti-inflammatory treatment is usually required to control ocular inflammation. Systemic corticosteroids are often used as a therapeutic bridge to long-term immunosuppressive therapy. When ophthalmic surgery is performed on an eye with uveitis, the corticosteroid may need to be increased or restarted to prevent postoperative uveitis exacerbation.

Any route of corticosteroid administration can cause adverse effects, so the risk–benefit ratio of treatment should be considered carefully and discussed with the patient before initiation. Local corticosteroids convey the highest risk of ocular adverse effects, notably posterior subcapsular cataract and ocular hypertension. Compared with adults, children are more likely to have ocular adverse effects, and they can be more severe. The systemic risks of corticosteroids are discussed later in this chapter. See also BCSC Section 1, *Update on General Medicine*, and Section 2, *Fundamentals and Principles of Ophthalmology*.

CLINICAL PEARL

The following are some important points to remember when local corticosteroid treatment for noninfectious uveitis is being considered:

- Anterior and mild intermediate uveitis may be initially treated with topical corticosteroids.
- Local corticosteroid injections achieve a greater depth of penetration than topical formulations and may be used for a more posterior effect or as an adjunct to systemic treatment.
- Serial short-acting corticosteroid injections should be avoided as the sole treatment for chronic uveitis.
- Ocular hypertension and cataract formation are common adverse effects of local corticosteroid treatment and may be more frequent and severe in children than in adults.