Condition: Pain management

Description:

In general, over-the-counter (OTC) pain medication or topical ophthalmic drugs (such as cyclopentolate) will be sufficient to ease discomfort in patients under the care of an optometrist. However, non-narcotic oral pain relief, such as aspirin, nefopam hydrochloride (Acupan) and paracetamol, or non-steriodal anti-inflammatory agents (NSAIDs), e.g. ibuprofen and diclofenac, may at times be necessary to reduce ocular pain.

Significance:

Many ocular conditions are associated with some degree of pain, and pain relief can have a significant impact on a patient's functional ability, for example returning to work. Before initiating therapy, it is essential to assess:

1. Medical history – pregnancy, alcohol use, antidepressants, haematological disease, kidney/liver failure
2. Drug history – including OTC and naturopathic remedies
3. Allergy history – rash, anaphylaxis
4. Drug reactions – nausea, vomiting, gastrointestinal bleeding.

Indications:

Indications that require temporary pain management may include: corneal abrasion, foreign body removal, trauma, and co-management with an ophthalmologist after ocular surgery.

Signs:

It is imperative to diagnose the cause of pain before beginning any form of pain management therapy. The nature of pain, as well as its severity and location, should also be assessed before initiating treatment.

Pain Management:

Topical Treatment

The advantage of topical therapy is that it can reach superficial tissues (e.g. episclera) in higher concentration and there are fewer side effects. In many cases topical agents, such as topical NSAIDs and/or cycloplegia, will be adequate.

1. ***NSAIDs:*** can reduce inflammation, maintain pupil dilation, and induce analgesic effects without the sight-threatening effects of topical steroids. NSAIDs do not appear to result in corneal epithelial damage but patients often note a burning sensation on instillation (1, 2). Ketorolac (Acular), in particular, has been shown to have potent analgesic activity with moderate anti-inflammatory effects (3). In cases of corneal abrasion, ketorolac has been shown to be more effective for the management of pain than control drops (vehicle) (4).

   Although side effects of topical NSAIDs are uncommon, their use has been associated with corneal signs such as punctate epitheliopathy, immune rings, persistent epithelial defects, and corneal melting. Therefore, careful monitoring of patients is required (5).

2. ***Cycloplegics:*** ocular pain often accompanies intraocular inflammation. It is common for patients with significant corneal abrasions or a corneal foreign body to develop a mild iritis. In these cases, cycloplegia can be an effective form of pain management by temporarily inducing pupillary dilation and paralysing the ciliary muscle. Note: use of cycloplegia can significantly impair visual function for driving/work tasks.

3. ***Topical corticosteroids:*** use is limited to the cessation of ocular inflammation, which will reduce the pain. However, before steroid therapy is initiated, it is important to diagnose the cause of pain and treat accordingly.

4. ***Bandage contact lens:*** in cases of a large corneal abrasion or severe recurrent corneal erosion syndrome (RCES), a bandage contact lens may also provide significant pain relief, in combination with prophylactic, preservative-free, antibiotic cover.

Topical ocular anaesthetics should never be used to manage ocular discomfort due to their toxicity to the corneal epithelium, which will delay wound healing (6), and could result in corneal perforation with prolonged use.

Oral Treatment

1. ***Aspirin:*** exerts its anti-inflammatory, analgesic and anti-pyretic effects via inhibition of the enzyme cyclo-oxygenase (COX). In low doses, it is used for blood clot prevention, however, in higher does it can be an effective analgesic agent.

   Aspirin is contraindicated in children and in patients with a history of aspirin allergy, gastrointestinal ulcers, blood-thinning medication (e.g. Warfarin), and in pregnancy as there is evidence of risk to the foetus.

   Adverse reactions can include bronchospasm, asthma, gastro-intestinal bleeding, renal damage, liver toxicity, dizziness, tinnitus, impaired hearing and severe skin reactions. Patients should be counselled to avoid alcohol and herbal products while using aspirin.

2. ***Paracetamol (acetaminophen):*** when used as directed is a generally safe drug, however, it does have a narrow therapeutic range and doses higher than recommended entail a risk of serious, irreversible liver damage. Therefore, paracetamol is contraindicated in patients with hepatic failure or decompensated active liver disease. It also has the potential for serious harm from accidental or deliberate overdose (7), and a careful medical history is required to check that other medications being taken concurrently do not contain paracetamol.

   Paracetamol should also be used with caution in patients with alcoholism, anorexia and bulimia, and in patients with chronic malnutrition and dehydration (e.g. from excessive vomiting). Paracetamol is probably safe to use in pregnancy although it is always best to avoid any treatment in the first trimester at least.

   Adverse events are very rare although thrombocytopenia, anaphylaxis, Steven Johnson Syndrome, bronchospasm and hepatic dysfunction have been reported. The anticoagulant effect of warfarin and other coumarins may be increased by the regular daily use of paracetamol with increased risk of bleeding. However, no effect in bleeding from short-term use has been reported.

3. ***Nefopam hydrochloride (Acupan):*** is a non-narcotic analgesic that provides comparable pain relief to aspirin and paracetemol. Although structurally related to antihistamines, it has no anti-inflammatory properties (8).

Nefopam is contraindicated in patients with convulsive disorders and those taking antidepressant monoamine oxidase inhibitors (MAOIs). It should be used with caution in the elderly, and patients at risk of angle-closure, urinary retention, or impaired liver or kidney function (9). Nefopam should not be given to patients under 12 years of age, as its safety and efficacy have not been established in children.

The most common side effects are sweating and nausea, which occur in 10-30% of patients (8).

4. ***Ibuprofen:*** is a NSAID with analgesic and antipyretic properties, and is indicated for the relief of chronic and/or acute pain with an inflammatory component.

   Ibuprofen may inhibit the effects of low-dose aspirin, so should be used with caution in patients with cardiovascular disease or known cardiovascular risk factors. It is also contraindicated in patients with known hypersensitivity to ibuprofen, aspirin or other NSAIDs; patients with a history of GI bleeding or perforation; patients with Crohn's disease, recurrent peptic ulceration or GI haemorrhage; patients with severe heart, liver or renal failure; patients with asthma; and during the third trimester of pregnancy.

   Ibuprofen appears to be well tolerated in elderly patients, but as many elderly patients will have some degree of renal impairment, the full adult dosage should be used with caution.

   The most common adverse effects are GI upset with nausea, diarrhoea, vomiting, abdominal cramps and pain, however, these are less likely to occur in lower doses. Other side effects include fluid retention, dizziness, headache, tinnitus, rash, decreased appetite and fatigue.

5. ***Diclofenac (Voltaren):*** is a NSAID which has a pronounced analgesic effect with a rapid onset of action.

   Contraindications and precautions are similar to other NSAIDs, including an increased risk of cardio-thrombotic events, onset of hypertension or worsening of pre-existing hypertension, gastrointestinal events, and severe skin reactions.

   Diclofenac is not recommended for use in patients with asthma or during pregnancy, particularly during the final trimester where NSAIDs may lead to

uterine inertia. Diclofenac is not recommended for use in children younger than 14 years of age.

Review:

As all pain-relief medication can have serious side effects, regular review is necessary. The time frame for review will depend on the condition being treated. A realistic goal is to reduce pain as quickly possible with the minimum amount of side effects. For ocular pain the process is usually acute, and pain relief should be required for only 24-48 hours. Medications for pain relief should never be prescribed for more than 72 hours, and up-to-date dosage regimens and contraindications should always be checked in the drug formulary.

Referral Criteria:

Pain associated with inflammatory conditions, such as preseptal cellulitis and scleritis, should always be referred for urgent ophthalmological consultation as these conditions require systemic management.

Pain that is not improving after 2 days, or if the underlying cause is unclear, or the pain is out of proportion with the current diagnosis, the case should be referred for further medical evaluation.

Informed Consent:

As with all healthcare interventions, the therapeutic optometrist is responsible for ensuring that the patient has been advised of the possible benefits and risks associated with the prescription medication, in order that the patient can make an informed decision and provide consent to the treatment plan.

Controlled drugs:

Controlled drugs are those specified under the Schedules to the Misuse of Drugs Act 1975 and are more tightly controlled than prescribing of other medicines reflecting the need to restrict access to them and minimise misuse. Prescribing of controlled drugs is restricted to medical practitioners, nurse practitioners, dentists, midwives, designated

prescriber nurses and pharmacists, and veterinarians (s2(1) of the Misuse of Drugs Regulations 1977).

To be clear, there are **no** circumstances under which an optometrist may prescribe a controlled drug. To do so would be illegal under New Zealand law and could result in prosecution and disciplinary action.

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These guideline documents are not exhaustive and should be considered 'living' documents that will be added to over time. Conditions outside those described in these guidelines may be deemed out of scope for independent optometric management and require referral to a medical practitioner. If in doubt, please check with the Board for advice.

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