Eyedrops can affect more than the eye

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in Nürnberg

While ophthalmic eye drops may contain a very small amount of a given drug, nurses and staff should remember that these medications can still have significant systemic side effects, said Sabine Menkhaus MD, University Eye Clinic Magdeburg, Germany.

"When administered, eye drops come into contact with the conjunctiva and the secretory membranes of the tear canals, eventually reaching the circulatory system through the mucosa of the nose and throat. One should not underestimatethe potential systemic side effects that ocular medications may present," Dr Menkhaus told the 17th Congress of the German Ophthalmic Surgeons (DOC) in Nürnberg, Germany.

A good example of a very commonly applied ophthalmic medication that can cause unwanted systemic side effects is atropine. Atropine drops are administered to achieve mydriasis, which allows retinal examination, refraction measurement, and even the dissolution of adhesions between the iris and the lens.

Side effects to watch out for include: fever, headache, facial erythema, dry mouth, high blood pressure, difficulty in concentration, cramps (in children), and blurry vision.

Patients should be advised not to drive until this effect subsides. Also, closed angle glaucoma patients should not receive mydriatic drugs, to avoid a glaucoma attack.

Glaucoma medications represent another group of ophthalmic drugs that can bring about unwanted systemic reactions. For instance, beta blockers (Timolam, Betametan, Vistagan, Arutimol), which decrease the production of aqueous humour, may cause bradycardia, reduced blood pressure, bronchial asthma, and dry eye.

Cholinergic drugs such as pilocarpine are used in glaucoma therapy to increase the flow of aqueous humour and induce a narrow pupil. They may also, in turn, worsen vision in patients with cataracts and reduce visual acuity at night.

Both alpha-sympathomimetics (lupidine and Alphagan) and carbonic anhydrase blockers (Trusopt, Azopt, Cosopt), on the other hand, cause a reduction in aqueous humour production. They can be the cause of allergy, fatigue and headaches, with carbonic anhydrase blockers leaving the patient with a bitter, metallic taste.

Other carbonic anhydrase blockers like Diamox and Glupax tablets affect the excretion of potassium in the kidney, causing a low blood potassium level (hypokalemia), heart arrhythmias, exsiccation, paraesthesias in the extremities, and nausea.

Xalatan and Travatan are prostaglandin analogues used in glaucoma therapy. These agents can cause an increase in aqueous humour emptying and a dark discoloration of the iris. As these drugs may bring about increased eyelash growth, Dr Menkhaus suggested applying it to both eyes to achieve a better cosmetic result.

Drugs that "get the red out" function by causing a vasoconstriction of the conjunctival vessels. Dr Menkhaus urged ophthalmic professionals to remind their patients not to abuse these drugs as the eye can get used to them over time. So much so, that the eye may appear red unless they are applied. These drugs may also cause a rise in blood pressure, daze and even hallucinations.

Local, as opposed to systemic, drug reactions are varied. Reactions to ophthalmic medications may include eczema, which results from eye drops that come into contact with the skin of the eyelids or cheeks. The skin exerts an allergic reaction from exposure to the active ingredient or conservation medium.

Antibiotic eye drops and eye ointments are used for the treatment of inflammations of the lids, conjunctiva, cornea, and lacrimal pathways. These drugs may cause irritation in the eye, but systemic side effects are unlikely.

Dr Menkhaus pointed out that local anesthetic drops such as Nozovine or ProparakaRan P0S should be administered by the doctor or staff during treatments. She warned that if used at home as a remedy for chronic pain, a disruption in the nutrition of the cornea may occur, which could ultimately lead to corneal ulcerations.

She asserted that eye drops that contain corticosteroids are a well-known cause of increased intraocular pressure (and glaucoma) and may further catalyse the development of lens opacification (and cataract).

Also, patients with a healed herpetic inflammation of the eye may suffer a reactivation of the viral disease when receiving cortisone-containing medications, unless anti-viral eye ointment is administered concomitantly.

Even iodine, which is applied to the skin and conjunctiva pre-operatively for contact allergy on eye lids and surrounding ocular tissues. They help push back the vitreous allowing reduced trauma to the corneal endothelium and deep anterior chamber during anterior segment surgery.

Dr Menkhaus recommended a simple trick to side-step potential adverse reactions.

"After administering the eye drops, the doctor should apply slight pressure with his finger on the descending tear canal for approximately two minutes. Any excess drops should be carefully wiped away and cleaned from the eyelids and cheeks. This way one can ensure that only a minimal drug dose enters the circulatory system, and reduce the possibility of systemic side-effects and the risk of contact allergy on eye lids and cheeks."

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