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USE OF EYE DROPS IN PREGNANCY

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SUMMARY: Eye drops are used as a route to administer medication to the eye and, depending on the condition being treated, may contain steroids, antibiotics, antihistamines, sympathomimetics, beta-adrenoceptor blocking drugs, parasympathomimetics, parasympatholytics, prostaglandins, non-steroidal anti-inflammatory drugs (NSAIDs) or topical anaesthetics.

There are few published data on the potential fetotoxic effects of topical ophthalmic medications in human pregnancy. Pharmacokinetic data on the systemic absorption of individual preparations are also lacking. Many of these drugs are administered systemically in pregnancy to treat underlying maternal conditions without any evidence of an increased risk of birth defects above the normal background rate. Therefore, it is unlikely that ocular administration of these drugs will be associated with an increased risk of fetal toxicity.

Exposure to eye drops at any stage in pregnancy would not usually be regarded as medical grounds for termination of pregnancy or any additional fetal monitoring.

Please contact the service on 0844 892 0909 to inform us of any pregnancy where exposure to eye drops has occurred.

If you require assistance in making a patient-specific risk assessment, please telephone UKTIS on 0844 892 0909 to discuss the case with a teratology specialist.

Drugs are most commonly administered to the eye by topical application, however a varying amount may enter systemic circulation due to absorption through conjunctival vessels and the nasal mucosa. Following application of eye drops, pressure on the lacrimal punctum (through digital pressure over the medial part of the lower eyelid) may reduce nasolacrimal drainage thus decreasing systemic absorption from the nasal mucosa.[1] Little data is available on the effects of eye drop medication in pregnancy but no increased risk is expected.[2, 3] Caution should be applied for any medication known to be teratogenic in systemic administration.[3]

Anti-infective preparations

Most superficial eye infections can be treated topically with antibacterials or antivirals. When considering treatment with antibacterial agents during pregnancy, the following factors should be considered: the severity of the maternal infection, the effects of failing to treat the mother, and the potential fetotoxicity of the drugs to be used. Systemic use of anti-infective agents is considered in **Treatment of infections in pregnancy**.

Chloramphenicol
Chloramphenicol is a broad spectrum antibacterial drug. The limited published data do not indicate that use of topical chloramphenicol is associated with an increased incidence of congenital malformations. There are concerns that use near term may be associated with a risk of neonatal Grey Baby Syndrome, however there are no well-documented cases of this occurring. Due to lack of data and potential concerns, topical use of chloramphenicol should be avoided wherever possible.

Aminoglycosides
Neomycin and gentamicin are aminoglycoside antibiotics. Maternal use of topical preparations (eye or ear drops) is not expected to be associated with any increased risk and may be considered during pregnancy if compellingly indicated.

Aciclovir
Aciclovir is an antiviral agent used topically for herpes simplex infections of the skin, mucous membranes and eye. Overall, the data do not show an increased risk for congenital malformations or other fetal toxicity from exposure to topical aciclovir at any time in pregnancy.

Fucidic Acid
There are no published reports regarding the use of topical fucidic acid during pregnancy, however the manufacturer states that it may be used in pregnancy if required.[4]

Other anti-infective preparations
No reports were found regarding malformations or adverse pregnancy outcomes after ophthalmic administration of ciprofloxacin, levofloxacin, ofloxacin, polymyxin B or propamidine. Due to the lack of data, use of these drugs in pregnancy cannot be routinely recommended and should be reserved for compelling indications.

Corticosteroids and anti-inflammatories
Prednisolone, dexamethasone, betamethasone and hydrocortisone are glucocorticoids. Systemic glucocorticoid use during pregnancy has been associated with an increased risk of cleft palate and impaired fetal growth in animal models that has not been conclusively associated with human use.[5-7] Maternal use of topical preparations (eye or ear drops) is not expected to be associated with these risks.

No reports were found regarding malformations or adverse pregnancy outcomes after ophthalmic administration of the steroids flurometholone, loteprednol, rimexolone or the antihistamines antazoline, azelastine, emedastine, epinastine, ketotifen, nedocromil, olopatadine or lodoxamide. Due to the lack of data, use of these drugs in pregnancy cannot be routinely recommended and should be reserved for compelling indications.

Sodium Cromoglicate
Sodium cromoglicate is a mast cell stabiliser used for the treatment of asthma, food allergies, allergic rhinitis, and allergic conjunctivitis. Data does not suggest an increased risk of congenital malformation or an adverse effect on fetal development or pregnancy outcome, therefore sodium cromoglicate may be used in pregnancy if clinically indicated.

Mydriatics and Cycloplegics
Atropine is an antimuscarinic agent used to dilate the pupil. Data on the use of atropine in pregnancy is limited but does not indicate an increased risk of malformation or other adverse pregnancy outcome.

No reports were found regarding malformations or adverse pregnancy outcomes after ophthalmic administration of phenylephrine, homatropine, cyclopentolate or tropicamide. Phenylephrine is a sympathomimetic drug which is generally avoided during pregnancy

because of its vasoconstrictive activity. One study of 26 pregnancies found no association between use of homatropine in the first four months of gestation and infant malformations[8], however data is insufficient to state that there is no increased risk. Due to the lack of data, use of these drugs in pregnancy cannot be routinely recommended and should be reserved for compelling indications.

Glaucoma treatment

Glaucoma is a disorder of the eye characterised by loss of visual field with optic nerve damage. Glaucoma is usually associated with raised intra-ocular pressure; however it may occur when the intra-ocular pressure is within normal limits. The condition is managed pharmacologically by using drugs which reduce the intraocular pressure. Please refer to the **Treatment of glaucoma in pregnancy** monograph.

Local Anaesthetics

No reports were found regarding malformations or adverse pregnancy outcomes after ophthalmic administration of lidocaine, oxybuprocaine, proxymetacaine or tetracaine. One study of 23 pregnancies found no association between use of tetracaine in the first four months of gestation and infant malformations[8], however data is insufficient to state that there is no increased risk. Lidocaine has been used for a number of years without apparent ill-consequence.[9] Although data is limited, topical local anaesthetics may be considered for compelling indications.

Diagnostic and perioperative preparations

No reports were found regarding malformations or adverse pregnancy outcomes after ophthalmic administration of fluorescein, acetylcholine or nepafenac. Due to the lack of data, use of these drugs in pregnancy cannot be routinely recommended and should be reserved for compelling indications.

Diclofenac, flurbiprofen, ketorolac are **nonsteroidal anti-inflammatory drugs** (NSAIDs). The available data on NSAIDs generally do not indicate that exposure before 30 weeks of pregnancy is associated with an increased risk of malformations. Exposure to NSAIDs (both oral and topical use) after 30 weeks of pregnancy is associated with an increased risk of premature closure of the ductus arteriosus[10] and oligohydramnios.

Conclusions

There are few published data on the potential fetotoxic effects of topical ophthalmic medications in human pregnancy. Varying amounts may enter systemic circulation due to absorption through conjunctival vessels and the nasal mucosa. Following application of eye drops, pressure on the lacrimal punctum may reduce nasolacrimal drainage thus decreasing systemic absorption. In general, it is unlikely that ocular administration of these drugs will be associated with an increased risk of fetal toxicity, however NSAID preparations should not be used after 30 weeks gestation.

References

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