A double-masked evaluation of lignocaine-prilocaine cream (EMLA) used to alleviate the pain of retrobulbar injection

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Abstract
A randomised, placebo controlled, double-masked study was undertaken in 115 patients undergoing cataract surgery to assess the efficacy of the anaesthetic cream EMLA (eutectic mixture of local anaesthetic, lignocaine-prilocaine) in alleviating the pain of retrobulbar injection. Sixty three patients received the EMLA cream and 52 the placebo cream. The pain was assessed objectively by the anaesthetist, who observed the reaction of the patient on needle insertion, and subjectively by the patient. Significantly lower pain scores were recorded in patients treated with EMLA cream (anaesthetist's observation: p<0.01, patient's assessment: p<0.006). No patients experienced serious side effects in either treatment group.

Patients and methods
One hundred and fifteen patients between the ages of 57 and 95 years who presented to the Department of Ophthalmology, Southport and Formby District General Hospital, for day case cataract surgery under local anaesthetic were included in the study. Informed, written consent was obtained from all the patients. The study protocol was approved by the Hospital Ethical Committee.

EMLA 5% cream consists of a mixture of lignocaine base 25 mg/ml (107 mmol/l) and prilocaine base 25 mg/ml (113 mmol/l). The remaining ingredients are an emulsifier, a viscosity increasing agent, and water. The placebo cream, a mixture of light liquid paraffin, white soft paraffin, and wool fat, was visually identical to EMLA.

The study was a double-masked comparison of EMLA cream with the placebo. The treatments were distributed at random, and at the end of the study 63 patients had received EMLA cream and 52 patients the placebo cream. Oral premedication was not used for any patient.

A thick layer of cream, about 2 ml, was applied in the ward by a nurse to the skin in the region of the outer half of the inferior orbital margin at least one hour preoperatively. The cream was covered with a Tegaderm (3M) occlusive dressing. Great care was taken while applying the cream and the occlusive dressing to prevent the cream from entering the eye. On the patient’s arrival at the operating theatre anaesthetic room the occlusive dressing was removed and the cream wiped off with a dry swab. Local reactions, if any, were recorded by the person administering the retrobulbar injection, who was unaware of the identity of the topical cream.

Retrobulbar injections were performed with a 23 standard wire gauge, 30 mm long disposable needle. The needle was introduced at the junction of the lateral one-third and the medial two-thirds of the inferior orbital rim. Up to 5 ml of 0.5% bupivacaine hydrochloride with 1500 units hyaluronidase was slowly injected after aspiration to eliminate possible intravascular injection. This technique was used for all the study patients.

The person who administered the retrobulbar injection was required to make two assessments. The first was of the patient’s reaction at the...
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Figure 2

Pain on retrobulbar injection as determined by the anaesthetist.

Figure 1

Pain on retrobulbar injection as indicated by the patient.

Discussion

EMLA cream has proved to be effective in reducing the pain of venepuncture in both children and adults.4 It penetrates the intact skin and has been used successfully as a topical analgesic for superficial skin procedures,9 lumbar punctures,11 and arterial cannulation.13 Our study of elderly patients undergoing cataract surgery demonstrates the efficacy of EMLA cream in alleviating the pain of retrobulbar injection. This benefit the patient undergoing cataract surgery because it reduces anxiety, and the doctor because the retrobulbar injection is administered more easily if the patient does not react adversely to the needle puncturing the skin.

There were no unwanted local effects of any significance. Despite great care in application, the study creams leaked on to the eyes of five patients. The EMLA cream produced transient stinging, congested conjunctiva and possibly in one patient corneal epithelial denudation. However, uncomplicated cataract-intraocular lens surgery was possible in all the patients.

In conclusion, EMLA cream is effective in alleviating the pain of retrobulbar injection in patients undergoing cataract surgery. We now
use this cream routinely for all patients undergoing intraocular surgery under local anaesthetic.

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