cally incorporated into 'standard practice' as the sine qua non of abuse. Equal open mindedness to the interpretation of social factors in such cases should be maintained until a definite diagnosis has been made.

Like any other haemorrhage, those in the optic fundus may be traumatic or spontaneous. Among the spontaneous causes, a bleeding diathesis should be considered.[1] Diagnostic evaluation by computed tomography of the brain is also important. A localised intracerebral haematoma is most unlikely to be traumatic if there is no other evidence of parenchymal injury. Shaking may cause generalised brain contusion.[3] Alternatively, a subdural haemorrhage may be induced and a posterior interhemispheric distribution is particularly characteristic of shaking injury (Fig. 2).[4]

Recognition of a subdural haemorrhage by aspiration through the anterior fontanelle should also be considered critically. Any intracranial haemorrhage may leak into the subarachnoid space and a subdural haematoma can develop if an aneurysm or arteriovenous malformation ruptures through the arachnoid mater. Such a finding has been described in a 3 month old child with an intracerebral aneurysm.[5] Arteriovenous malformations may also occur within the meninges and so bleed directly into the subdural space. We can see little value in performing diagnostic subdural taps when access to computed tomography facilities are available.

We suggest that a computed tomogram of the brain should be considered urgently in the evaluation of cases of possible shaking injury or unexplained fundal haemorrhages. This should clarify the appropriate course to follow and prevent misinterpretation. A ruptured intracerebral arterial aneurysm may be eminently suitable for curative neurosurgery.[6]

We thank Dr Ian Holland for his neuroradiological expertise.

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Topical anaesthesia for venepuncture

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SUMMARY A topical anaesthetic cream was tested in a randomised, double blind, placebo controlled trial of 15 children. The severity of pain experienced during venepuncture was assessed, using visual analogue and verbal rating scales. The topical anaesthetic cream was found to be significantly superior to placebo using each form of assessment.

Venepuncture is probably the commonest procedure carried out on paediatric patients requiring medical treatment. Many children tolerate the procedure well, but for some it is a major ordeal. A topical preparation that could be applied without discomfort and alleviate the pain of venepuncture would be particularly useful for children receiving repeated venepunctures.

To penetrate intact skin a topical anaesthetic cream should contain local anaesthetic in high concentrations. This has hitherto been difficult to achieve because most anaesthetic bases are crystalline at room temperature and unstable in high concentrations. By mixing two anaesthetic bases, lignocaine and prilocaine, in equal proportions, an eutectic mixture is obtained that is liquid at room temperature. This mixture, known as EMLA (Eutectic Mixture of Local Anaesthetics), can be incorporated into an emulsion without first dissolving the bases in oil, making it possible to attain a

higher concentration of active base for each emulsion droplet than has been previously achieved.[1] The water within the emulsion enhances skin penetration by the local anaesthetic.[2] On the basis of these properties, it can be predicted that the cream would afford good dermal analgesia.

The aim of the present study was to evaluate the analgesic effect of the anaesthetic cream with respect to venepuncture pain in children with leukaemia who were attending for repeated venepunctures.

Subjects and methods

Fifteen children receiving maintenance treatment for lymphoblastic leukaemia were asked to take part in the trial. Informed consent was obtained from patients and parents and the trial was approved by the local ethical committee.

The active preparation tested consisted of a mixture of lignocaine base 25 mg/ml and prilocaine base 25 mg/ml, together with an emulsifier (Arlatone) and a thickener (Carbopol). A placebo cream was prepared in which the active bases were substituted with Migyol 812 oil. This placebo was visually and cosmetically identical to the active cream. Both placebo and active cream were presented in identical 5g aluminium tubes.

Each patient was assigned a pack of four tubes. These were labelled 1–4 in order of administration and contained the treatment sequences A_1 P_2 A_3 P_4 or P_1 A_2 P_3 A_4 (A=active, P=placebo) as specified by a randomisation list. The trial was conducted double blind. The first application for each child was made in the clinic by the investigator, after which tubes 2–4 were taken home for the cream to be applied by a parent before subsequent clinic visits. The cream was always applied in a thick layer (roughly 2 ml each application) under an occlusive dressing, Tegaderm 3M, for a period of at least 60 minutes before performing the venepuncture. At the end of this time the dressing and cream were removed and the site cleansed with 0·5% chlorhexidine in 70% ethanol. Venepunctures were performed on the dorsum of the hand or the antecubital fossa, using a 21 or 23 gauge needle. A total of seven clinicians and nursing staff were involved in performing the venepunctures.

Venepuncture pain was assessed using a 100 mm visual analogue scale and a four category verbal rating scale. The response categories were: (1) no pain; (2) some pain but less than a normal venepuncture; (3) the same degree of pain as a normal venepuncture; and (4) more painful than a normal venepuncture. In most cases the assessment was made by the child. In the case of younger children the assessment was made with the aid of the parent.

'Ease of venepuncture' was assessed by the operator, using a three point verbal response scale, categorised as: (1) easier than usual; (2) the same as usual; and (3) more difficult than usual.

At the end of the trial the value of the active cream was assessed by asking the parents whether they found the cream useful and worth while.

Statistical analysis. Non-parametric statistical methods were used throughout. The data for all variables was analysed using Friedman's ANOVA. The multiple comparisons test based on Friedman rank sums and Fisher's exact test were used to examine treatment differences in greater detail.

Results

Fourteen children completed the study. There were eight boys and six girls aged 1–14 years, with a mean age of 7 years. One patient, a 4 year old girl, refused to have further applications of cream after her second visit because she disliked the occlusive dressing.

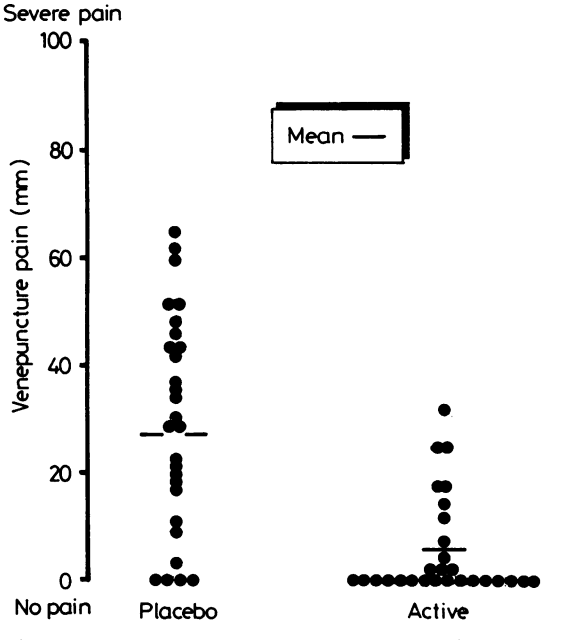

Figure. *Distribution of pain scores on the visual analogue scale as reported by children with leukaemia treated with active or placebo cream.*

$p<0.0005$, Friedman non-parametric two way ANOVA.

The distribution of pain scores on the visual analogue scales is shown in the Figure. There was a highly significant difference between the values for the active cream and the placebo ($p<0{\cdot}0005$).

The results on the four point verbal response scale of venepuncture pain also showed that the active cream was significantly superior to placebo. (Fisher's exact test, $p<0{\cdot}01$) There was no difference between the two treatments with respect to ease of venepuncture.

Most parents and patients considered the use of the active cream worth while. Parents were able to apply the cream to a suitable vein at home without difficulty. There were several occasions when patients had to wait for the cream to take effect, but this inconvenience was considered to be offset by the advantage of less painful venepuncture. Eleven of the 15 children or their parents said they would like to continue using the active cream.

There were occasional skin reactions, consisting of pallor or redness, to both active cream and placebo. These were transient and clinically unimportant.

Discussion

The results of this study clearly indicate that an anaesthetic cream is an effective agent for alleviation of venepuncture pain. It is slightly inconvenient to use, but many children requiring regular venepuncture seem to be sufficiently motivated to accept this. Most children in this study elected to continue using the active cream for subsequent venepuncture.

The factors affecting absorption of local anaesthetic through intact skin have been studied by Evers, who found it necessary to use a thick layer of cream as emulsion droplets in contact with the skin readily became depleted of local anaesthetic.[3] In the same study percutaneous absorption of lignocaine and prilocaine into the systemic circulation was found to be measurable but slight.

As in all local anaesthetic preparations it is necessary to consider the potential for hypersensitive reactions. There is an extensive clinical experience with lignocaine and prilocaine given by injection, and true allergic reactions are extremely rare. There is no reason to believe that these agents applied topically will behave differently.

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Meningitis due to *Haemophilus influenzae* resistant to ampicillin and chloramphenicol

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SUMMARY A case of ampicillin and chloramphenicol resistant *Haemophilus influenzae* meningitis successfully treated with cefotaxime is described.

Meningitis due to *Haemophilus influenzae* resistant to chloramphenicol and ampicillin is a recognised problem in the United States[1] but has only been reported once in the United Kingdom.[2] To our knowledge the case reported here is the first British case to be treated with cefotaxime.

Case report

A previously healthy 7 month old boy presented in