Treatment of children with migraine in the emergency department: a qualitative systematic review
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CRD summary
This review aimed to assess the effectiveness of treatments administered in the emergency department for children with migraine and status migrainosus. The authors concluded that there was a lack of evidence in an emergency department setting. This was a relatively well-conducted systematic review. The authors' conclusions were appropriate.

Authors' objectives
To assess the effectiveness of treatments administered in the emergency department for children with migraine and status migrainosus.

Searching
MEDLINE, EMBASE, DARE, Cochrane Database of Systematic Reviews and Cochrane Central Register of Controlled Trials were searched from inception to 2007; search terms were reported. Reference lists of relevant studies, guidelines and systematic reviews were searched for additional studies.

Study selection
Randomised controlled trials (RCTs) assessing medical treatments for acute migraine attacks in children up to 18 years of age were eligible for inclusion. Studies assessing prophylactic treatments were not eligible for inclusion.

The included studies assessed prochlorperazine, ketorolac, ibuprofen, acetaminophen (paracetamol), sumatriptan, rizatriptan, zolmitriptan and dihydroergotamine as first-line therapy in an outpatient neurology clinic setting or as second-line therapy in an emergency department setting after other treatments had failed. Most studies had a placebo control group. Participants ranged in age from four to 18 years and had migraine meeting International Headache Society Criteria or Prensky and Sommer criteria. Pain relief at two hours was the primary outcome in most studies.

The authors stated neither how the papers were selected for the review nor how many reviewers performed the selection.

Assessment of study quality
Two reviewers assessed the methodological quality of the included trials using the Jadad scale.

Data extraction
Two reviewers extracted data using a predefined table. When necessary, authors were contacted for missing data.

Methods of synthesis
A brief narrative synthesis was presented.

Results of the review
Fourteen double-blind RCTs were included in the review (n=4,112, range 14 to 888), including seven parallel group RCTs and seven cross-over design RCTs. The quality of the included trials was high, with six studies scoring 5 out of a possible 5 on the Jadad scale and six scoring 4 out of 5.

Second-line therapy in an emergency department setting
Intravenous prochlorperazine was more effective than intravenous ketorolac in relieving pain at one hour (one RCT). There were no significant differences in recurrence rates or adverse effects between the two treatments.

First-line therapy in an outpatient neurology clinic setting
Oral ibuprofen (three RCTs) and oral acetaminophen (paracetamol) (one RCT) were more effective than placebo in relieving pain at two hours. There were no significant differences in adverse effects between ibuprofen, acetaminophen and placebo (where reported). Oral sumatriptan (one RCT) was no more effective than placebo. The effectiveness of intranasal sumatriptan (four RCTs), oral rizatriptan (three RCTs), oral zolmitriptan (two RCTs) and oral dihydroergotamine (one RCT) were unclear. Intranasal sumatriptan was associated with more taste disturbance than placebo in three of the four RCTs. There were more adverse effects with zolmitriptan than placebo in both RCTs. One of three RCTs reported more adverse effects with rizatriptan than placebo.

Authors’ conclusions
There was a lack of studies evaluating the treatment of children with migraine in an emergency department setting.

CRD commentary
This review addressed a clear question with well-defined inclusion criteria. The authors searched electronic databases and reference lists to identify relevant studies. But, the authors did not report whether any language restrictions were applied and no attempts were made to obtain unpublished studies, increasing the potential for publication bias. The validity of the included studies was assessed using a validated quality assessment scale and results were reported. Half of the included RCTs were cross-over trials, which present weaker evidence than parallel group RCTs. Two reviewers performed data extraction and validity assessment processes, reducing the potential for reviewer bias and error. Adequate details of the included studies were presented.

Pain relief at two hours was the primary outcome in most studies. A brief narrative synthesis was presented in the abstract and discussion sections of the review. In view of the differences between studies a narrative synthesis was appropriate (although this should have been presented in the results section of the review). This was a relatively well-conducted systematic review. The authors’ conclusions reflected the lack of research for the treatment of migraine in an emergency department setting. It appeared to be appropriate to not draw conclusions for treatment in an emergency department setting based on research conducted in an outpatient clinic setting, although it was unclear why studies based in an outpatient setting were included in the review.

Implications of the review for practice and research
Practice: The authors stated that since prochlorperazine administered in an emergency department setting did not prevent recurrence of migraine, patients should be discharged with additional analgesics.

Research: The authors stated that future research should focus on finding the best first-line agent for mild to moderate migraine to be administered in an emergency department setting. Further research should be conducted to confirm the effectiveness of prochlorperazine for severe migraine or status migrainosus, including an assessment of the adverse effects of prochlorperazine. There was also a need to evaluate agents to decrease the recurrence of migraine attacks and the need for rescue medications after discharge from the emergency department.

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