Drugs for the treatment of migraine in children and adolescents

BY DR HANAN IHALI

Migraine affects up to 10% of children and adolescents. Treatments for migraine include symptom-controlling and preventive strategies.

Symptom-controlling therapies aim to eliminate pain and reduce the symptoms associated with migraine, including nausea and photophobia. Whereas, preventive medications are used to reduce the frequency and severity of migraine attacks.1,2,3

Oral analgesics such as paracetamol and ibuprofen are the backbone of acute therapy for migraine in children and adolescents. However, other agents such as ergot derivatives (e.g. dihydroergotamine) and the serotonin receptor agonists (triptans) have proven to be effective in adults.4,5

This review will summarise the current literature addressing the effectiveness of the various classes of drugs in the treatment of acute migraine in children and adolescents.

Characteristics of the studies

Prospective, placebo controlled studies of pharmacological interventions for acute migraine for children and adults were included. A study design were included including parallel group and cross over designs. All studies including participants under the age of 17 diagnosed with acute migraine were included.

Quality of the research

Studies included in the report had a low risk of bias. Only one study was of high risk of bias. Attrition bias was a major drawback.

Results

The following databases were searched; Cochrane Central Register of Controlled Trials (CENTRAL) (1991 to 2013, Issue 3), OvidSP MEDLINE (1946 to Feb 2016), Ovid MEDLINE In-Process & Other Non-Indexed Citations (2012 to Feb 2016), EMBASE (1980 to Feb 2016), Database of Abstracts and Reviews of Effects (1991 to Apr 2013), International Pharmaceutical Abstracts (1970 to Apr 2013), PsychINFO (1806 to Apr 2013) and EBSCOHost CINAHL (Cumulative Index of Nursing and Allied Health) (1937 to Apr 2013). Other gray literature and had searching the reference list of the included studies. The Clinical trials register (ClinicalTrials.gov) was also searched along with trial registries from GlaxoSmithKline and AstraZeneca.

The outcome measures were selected based on the suggested guidelines for controlled trials of drugs in migraine. The primary outcome measure was the percentage of pain-free participants at two hours; pain freedom was defined as the absence of pain at two hours before the use of additional or rescue medication. Secondary outcomes measure included the following: headache relief, headache recurrence, the use of rescue medication, presence of nausea and vomiting.


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Drugs for the treatment of migraine in children and adolescents

BY DEHANAN SPALDING

**Evidence Summary**

Migraine affects up to 10% of children and adolescents. Treatments for migraine include symptom-controlling and preventive strategies.

**Symptom-controlling therapies** aim to eliminate pain and reduce the symptoms associated with migraine, including nausea and photophobia. Whereas, preventive medications are used to reduce the frequency and severity of migraine attacks.1,2

Oral analgesics such as paracetamol and ibuprofen are the backbone of acute therapy for migraine in children and adolescents. However, other agents such as ergot derivatives (e.g., dihydroergotamine) and the serotonin receptor agonists (triptans) have proven to be effective in adults.3-5 This review will summarise the current literature addressing the effectiveness of the various classes of drugs in the treatment of acute migraine in children and adolescents.

**Characteristics of the studies**

Prospective, placebo-controlled studies of pharmacological interventions for acute migraine for children and adults were included. All study designs were included, including parallel group and cross-over designs. All studies including participants under the age of 17 diagnosed with acute migraine were included.

**Quality of the research**

Studies included in the report had a low risk of bias or an unclear risk of bias. Only one study was of high risk of bias. Attrition bias was a major drawback.

**Results**

The following databases were searched: Cochrane Central Register of Controlled Trials (CENTRAL) (1991 to 2013, Issue 3), ONCENTRAL MEDLINE (1946 to Feb 2013), Ovid MEDLINE In Process & Other Non-Indexed Citations (2012 to Feb 2016), EMBASE (1980 to Feb 2016), Database of Abstracts and Reviews of Effects (1991 to Apr 2013), International Pharmaceutical Abstracts (1970 to Apr 2013), PsyINFO (1980 to Apr 2013) and EBC/Cochrane CRAN (Cumulative Index of Nursing and Allied Health) (1937 to Apr 2013). Other grey literature and hand searching of the reference list of the included studies. The Clinical Trials Register (ClinicalTrials.gov) was also searched along with trial registries from GlaxoSmithKline and Astellas Zeneca.

The outcome measures were selected based on the suggested guidelines for controlled trials of drugs in migraine. The primary outcome measure was the percentage of pain-free participants at two hours; pain freedom was defined as the absence of pain at two hours before the use of additional or rescue medication. Secondary outcome measures included the following: headache relief, headache recurrence, the use of rescue medication, presence of nausea and vomiting.

A total of 27 randomised controlled trials (RCTs) of migraine symptom-relieving medications, including 9,158 children were included in the review. The mean age range of children was between 8.2 and 14.7 years.

A total of 24 studies included a tricyclic medication. Other medications included paracetamol, ibuprofen and dihydroergotamine.

Two small studies with 162 children included paracetamol and found it to be beneficial than placebo in reducing pain for 2 hours. (RR 1.87, 95% confidence interval CI 1.15 to 3.04).

Another study comparing paracetamol with placebo found no benefit in relieving migraine pain. These studies including 273 children comparing tricyclics with placebo found a beneficial effect (RR 1.67, 95% CI 1.06 to 2.62, NNTB 13). A total of 21 studies including 7,020 adolescents also found a beneficial effect of tricyclics over placebo (RR 1.32, 95% CI 1.19 to 1.47, NNTB 6).

Tricyclics however were associated with a small number of minor adverse events in adolescents (ID 0.13, 95% CI 0.08 to 0.18, NNTB 8).

One study including 490 adolescents comparing sumatriptan plus naproxen sodium versus placebo found a substantial benefit of the combination in relieving pain (RR 3.25, 95% CI 1.78 to 5.94, NNTB 6).

Only one small study of 13 children examining the efficacy of dihydroergotamine versus placebo found no benefit in reducing pain.

**Implications for practice**

There is insufficient evidence addressing the efficacy of paracetamol and the use of other NSAIDs or the combination of these analgesics with other medications (e.g., metamizol, caffeine) in children or adolescents. More studies addressing these combinations are needed to identify more treatment options.

**Conclusion**

Tricyclics are effective treatment for migraine in children and adolescents. Other options include ibuprofen and a combination of naproxen and sumatriptan can also be recommended.

**References**


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