Paracetamol: overused in childhood fever

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SYNOPSIS

Paracetamol has a mild beneficial effect on the symptoms of viral illness in childhood. However, the child may still remain unwell. Data suggest that fever may have an immunological benefit and that paracetamol may not decrease the number of recurrent febrile convulsions. There are good reasons, particularly related to toxicity, for limiting the use of paracetamol in children.

Index words: fever, toxicity, overdose, febrile seizures.

(Aust Prescr 2000;23:60–1)

Introduction

Some years ago Frank Shann warned us of the routine use of paracetamol in febrile young children.[1] (See also 'Paracetamol: use in children' Aust Prescr 1995;18:33–5). Evidence continues to mount against its indiscriminate use. The mild symptomatic benefit must be balanced against the increasing incidence of mistaken dosage and toxicity. As we live in a society which relies on drugs, both doctors and pharmacists should remind parents about the dangers of paracetamol.

Reasons for caution

Immunological

Humans and other animals given paracetamol are likely to shed virus for longer than controls.[2]

Toxicity

Several factors increase the risk of toxicity.

Cultural factors

It has previously been mistakenly accepted that all febrile children with infective illness require medication. We need to question this phenomenon as another example of society's reliance on drugs. The widespread use of antipyretic drugs (mainly paracetamol) means that mistakes in dosage will inevitably occur.

Psychological

Parental fever phobia has been documented.[3] Parents and doctors understandably need to feel they have something to offer sick, miserable children. However, cuddles, comfort and fluids are likely to be a safer and healthier alternative to drugs.

Drug toxicity

Whilst the frequency and dangers of intentional paracetamol overdosage are well known[4], until recently, only occasional accidental overdoses were reported. However, a recent report found that over a 13-year period 11 of 18 cases of fulminant hepatic failure were associated with accidental paracetamol ingestion. Two children died and one suffered serious neurological sequelae.[5] In another study of 47 children who were mistakenly given toxic doses of paracetamol 24 (55%) of the children died.[6] In the UK, package restrictions limiting the number of tablets per package have been introduced in an attempt to decrease the risk of self-poisoning. Similar steps may be necessary to minimise accidental overdosage in children.

The toxicity appears to occur when maximum total per kilogram daily doses are exceeded (90 mg/kg/day) and when repeated doses are given to children with pre-existing liver disease e.g. viral hepatitis.

Preparation variability

There are 23 non-tablet paracetamol preparations available on the Australian market. The available mixtures have various strengths including 24 mg/mL, 50 mg/mL and 100 mg/mL. An 8 kg infant only requires three mistaken 5 mL doses of the 100 mg/mL infant preparation (instead of the 24 mg/mL paediatric mixture) before a potentially hepatotoxic dose is reached (more than 150 mg/kg/24 hours).

Difficulty in proving benefit

The best study investigating the possible symptomatic benefits of paracetamol compared the drug to placebo.[7] The double-blind trial, using parental observations, analysed 225 febrile children's mood, comfort, appetite, fluid intake, activity and alertness. In the paracetamol treated group, activity and alertness significantly improved by one grade, mood and eating improved but not significantly, while drinking was worse. The parents' descriptions of comfort were equal in both groups. Interestingly, parents were unable to tell whether their child had been treated with paracetamol or placebo. The duration of fever was the same in both groups. Thus while some benefit was obtained, it does not justify its use if the risk of toxicity is real.

Difficulty in proving worth in preventing febrile convulsions

Febrile convulsions are associated with higher temperatures[8,9], but it is not known if lowering the temperature would have prevented these convulsions. Rate of rise of temperature is also thought important as 25% of convulsions seem to occur prior to, or at the commencement of, the fever. Previously, antipyretic prophylaxis has not been shown to be effective in reducing febrile seizures.[10,11]

Early data suggested antipyresis (including sponging) was of limited benefit in preventing recurrent febrile seizures. Further evidence now suggests that sponging does bring down the temperature faster than paracetamol or ibuprofen in the first 30 minutes, however, the effect of the drugs lasts for longer.[12]

Other medication options

Ibuprofen has been shown to be at least as effective as paracetamol[13,14] but is more likely to produce gastrointestinal and renal adverse effects. One suspects that if ibuprofen is used as widely as paracetamol then inevitably its toxicity and adverse effects will become a problem.

Further population studies are required to establish the safety and pitfalls of a regimen using a limited number of doses of paracetamol and/or ibuprofen.

While aspirin is also effective, its widespread use cannot be recommended because of its gastrointestinal and platelet effects, and an association with the rare Reye's syndrome.

Summary

- Paracetamol has a mild symptomatic benefit in childhood febrile illness
- Paracetamol toxicity data are increasingly worrying
- The various strengths of paracetamol mixtures are a major health hazard
- Paracetamol has not yet been shown to prevent febrile convulsions

Recommendations

1. There should be a concerted medical and pharmaceutical campaign to warn of the indiscriminate use of antipyretics in mild viral febrile illness in childhood.
2. An initial paracetamol dose of 15 mg/kg could be given, followed by three doses of 15 mg/kg over the next 24 hours if irritability continues.
3. No more than these four doses of paracetamol to be given for any one illness unless under medical or pharmacist supervision**.**
4. Each bottle of paracetamol mixture should have the mg/mL concentration in huge letters on the label, with the words '*Beware, potentially toxic*' on the 100 mg/mL bottle. Consideration should be given to withdrawal of all but the lowest strength.
5. Treat the child, not the thermometer.

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Self-test questions

The following statements are either true or false (answers on page 67)

5. Viral shedding times are reduced by paracetamol.
6. Antipyretic prophylaxis is effective at preventing febrile seizures.

Paracetamol: overused in childhood fever – a consumer perspective

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Dr Hewson's paper recommends a concerted medical and pharmaceutical campaign to warn against the indiscriminate use of medicines such as paracetamol to treat mild viral fevers in children. Perhaps a more appropriate focus for the campaign would be the safe and appropriate use of paracetamol in childhood illnesses, including information about other measures parents can use to help their child feel more comfortable while recovering.

Parents need the information in recommendations 2 to 4 of the paper. They need to know what dose of paracetamol to give,