

A 30 mg/kg loading dose of acetaminophen was more effective than a 15 mg/kg maintenance dose in febrile children

Tréluyer JM, Tonnelier S, d'Athis P, et al. *Antipyretic efficacy of an initial 30-mg/kg loading dose of acetaminophen versus a 15-mg/kg maintenance dose. Pediatrics* 2001 Oct;108:e73.

QUESTION: In febrile children, is an initial 30 mg/kg loading dose of acetaminophen more effective in reducing fever than a 15 mg/kg maintenance dose?

Source of funding: in part by Theraplix.

For correspondence:
Dr J M Tréluyer,
Pharmacologie
P Périnatale et Pédiatrique
Hôpital Saint Vincent de
Paul, Paris Cedex 14,
France.
jm.treluyer@
svp.ap-hop-paris.fr

Design

Randomised (unclear allocation concealment), blinded (unclear), controlled trial with 6 hours of follow up.

Setting

A hospital in Paris, France.

A 30 mg/kg loading dose of acetaminophen v a 15 mg/kg maintenance dose in febrile children*

Outcomes	30 mg/kg	15 mg/kg	Mean difference (95% CI)	
Time to obtain temperature < 38.5°C (min)	110.7	139.5	-28.8 (-66.5 to -8.9)	
Maximum temperature decrease (°C)	2.3	1.8	0.5 (0.3 to 0.8)	
Duration of rectal temperature < 38.5°C (min)	255.2	200.8	54.4 (14.7 to 94.2)	
Outcome at 6 hours	30 mg/kg	15 mg/kg	RRR (CI)	NNT (CI)
Received a temperature altering treatment	10%	26%	61% (10 to 83)	7 (4 to 52)

*Abbreviations defined in glossary; RRR, NNT and CI calculated from data in article.

COMMENTARY

What is the best way to treat fever in children? Acetaminophen, the "grand dame" of fever control, has been used commercially in the USA since 1950, but both experienced paediatric emergency nurses¹ and physicians² have reported varying approaches to their use of acetaminophen.

Tréluyer *et al*, in their study funded by the manufacturers of an acetaminophen brand, found that a loading dose of acetaminophen 30 mg/kg achieved a faster (0.5 h earlier) temperature decrease (0.5°C more) that lasted 1 hour longer than did a maintenance dose of 15 mg/kg. However, the results were not entirely clear cut. With the broad confidence intervals around the number needed to treat (NNT) of 7, as few as 4 children but as many as 52 would have to be treated with the higher dose of acetaminophen to prevent 1 additional child from requiring a temperature altering treatment such as tepid bathing or additional ibuprofen or aspirin within 6 hours of receiving acetaminophen. Also, it may be that the difference in duration of the target rectal temperature (< 38.5°C) is as little as 15 minutes between groups or as high as 94 minutes. Despite these imprecisions, the ease of using a medication already on hand in many medicine chests to gain more rapid and long lasting relief for uncomfortable children and parents makes it worth trying.

The authors also reviewed the safety of the loading dose of acetaminophen and provided substantial reassurance that this effective intervention is a safe and reasonable practice.

Gene Harkless, ARNP, DNSc
Associate Professor and Family Nurse Practitioner
Department of Nursing, University of New Hampshire
Durham, New Hampshire, USA

- Poirier MP, Davis PH, Gonzalez-del Rey JA, *et al*. Pediatric emergency department nurses' perspectives on fever in children. *Pediatr Emerg Care* 2000;16:9-12.
- Mayoral CE, Marino RV, Rosenfeld W, *et al*. Alternating antipyretics: is this an alternative? *Pediatrics* 2000;105:1009-12.

Patients

121 outpatients who were 4 months to 9 years of age (mean age 3 y), weighed 4-26 kg (mean weight 13 kg), and who had an initial rectal temperature of 39°C to 40.5°C, the cause of which was considered to be of viral or bacterial origin. Children were excluded if they had taken any temperature altering drug or antibiotics within the previous 24 hours; required antibiotic treatment within the first 4 hours of receiving acetaminophen; had hepatic, renal, or neurological diseases; had a history of hypersensitivity to acetaminophen; had febrile seizures; or had vomited during the medical consultation. Follow up data were not available for 1 patient.

Intervention

59 patients were allocated to a solution containing a 30 mg/kg loading dose of acetaminophen, and 62 were allocated to a solution containing a 15 mg/kg maintenance dose of acetaminophen, each given with an oral syringe.

Main outcome measures

The primary outcome measure was time to obtain a rectal temperature < 38.5°C. Secondary outcomes were time to maximum temperature decrease, maximum temperature decrease, time interval with temperature maintained below 38.5°C, rate of temperature decrease, number of patients given a temperature altering treatment during the 6 hour follow up period, and adverse events.

Main results

Analysis was by intention to treat. Mean time to obtain a rectal temperature < 38.5°C was shorter in the 30 mg/kg group than in the 15 mg/kg group (table). The maximum temperature decrease was higher in the 30 mg/kg group than in the 15 mg/kg group (table). Duration of rectal temperature < 38.5°C was longer in the 30 mg/kg group than in the 15 mg/kg group (table). The number of patients who received a temperature altering treatment during the follow up period was lower in the 30 mg/kg group than in the 15 mg/kg group (table). No difference existed between groups for time to maximum temperature decrease, rate of temperature decrease, or adverse events.

Conclusion

In febrile children, a 30 mg/kg loading dose of acetaminophen was more effective than a 15 mg/kg maintenance dose in reducing fever.