

## Randomized Controlled Study of the Antipyretic Efficacy of Oral Paracetamol, Intravenous Paracetamol, and Intramuscular Diclofenac

**Authors :** Firjeeth C. Paramba, Vamanjore A. Naushad, Nishan K. Purayil, Osama H. Mohammed, Prem Chandra

**Abstract :** Background: Fever is a common problem in adults visiting the emergency department. Extensive studies have been done in children comparing the efficacy of various antipyretics. However, studies on the efficacy of antipyretic drugs in adults are very scarce. To the best of our knowledge, no controlled trial has been carried out comparing the antipyretic efficacy of paracetamol (oral and intravenous) and intramuscular diclofenac in adults. Methods: In this parallel-group, open-label trial, participants aged 14-75 years presenting with fever who had a temperature of more than 38.5°C were enrolled and treated. Participants were randomly allocated to receive treatment with 1,000 mg oral paracetamol (n=145), 1,000 mg intravenous paracetamol (n=139), or 75 mg intramuscular diclofenac (n=150). The primary outcome was degree of reduction in mean oral temperature at 90 minutes. The efficacy of diclofenac versus oral and intravenous paracetamol was assessed by superiority comparison. Analysis was done using intention to treat principles. Results: After 90 minutes, all three groups showed a significant reduction in mean temperature, with intramuscular diclofenac showing the greatest reduction ( $-1.44 \pm 0.43$ , 95% confidence interval [CI]  $-1.4$  to  $-2.5$ ) and oral paracetamol the least ( $-1.08 \pm 0.51$ , 95% CI  $-0.99$  to  $-2.2$ ). After 120 minutes, there was a significant difference observed in the mean change from baseline temperature between the three treatment groups (P, 0.0001). Significant changes in temperature were observed in favor of intramuscular diclofenac over oral and intravenous paracetamol at each time point from 60 minutes through 120 minutes inclusive. Conclusion: Both intramuscular diclofenac and intravenous paracetamol showed superior antipyretic activity than oral paracetamol. However, in view of its ease of administration, intramuscular diclofenac can be used as a first-choice antipyretic in febrile adults in the emergency department.

**Keywords :** antipyretic, intramuscular, intravenous, paracetamol, diclofenac, emergency department

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