MAK HILL Publications International Journal of Tropical Medicine

Research Article
doi: 10.59218/makijtm.2024.2.74.77

OPEN ACCESS

Key Words
Antipyretic drug, fever, paracetamol, tepid sponging

Corresponding Author
Niveditha .H.V,
Department of Pediatrics, Subbaiah institute of Medical Sciences
nivedithahv85@gmail.com

Author Designation
[1]SNCU specialist
[2]Specialist Pediatrics
[3]Specialist Paediatrician
[4]Assistant professor

Received: 25 February 2024
Accepted: 30 March 2024
Published: 30 April 2024

Citation: Soumya D. Kamlapurkar, B.T. Bhuvanesh, Pavitra V. Arunachalmath and Niveditha .H.V, 2024. Comparing The Efficacy Of Tepid Sponging And Antipyretic Drug Versus Only Antipyretic Drug In The Management Of Fever Among Children : A Randomized Controlled Trial. Int. J. Trop. Med., 19: 74-77, doi: 10.59218/makijtm.2024.2.74.77

Comparing the Efficacy of Tepid Sponging and Antipyretic Drug Versus only Antipyretic Drug in the Management of Fever among Children: A Randomized Controlled Trial

[1]Soumya D. Kamlapurkar, [2]B.T. Bhuvanesh, [3]Pavitra V. Arunachalmath and [4]Niveditha .H.V
[1]NHM, GIMS Hospital Kalaburagi, India
[2]CHC Doddakunche, Holenarasipur 573211, India
[3]CHC Akkialur, Tq. Hanagal Dt. Haveri, India
[4]Department of Pediatrics, Subbaiah institute of Medical Sciences, India

Abstract
To compare the efficacy of tepid sponging and antipyretic drug versus only antipyretic drug in the management of fever among children. Randomized controlled trial. tertiary care hospital BIMS. 1198 children, 6mon-12 yrs age with axillary temperature $\geq 37^0$ celsius. Tepid sponging and antipyretic drug (Paracetamol) (n = 586) or only antipyretic drug (Paracetamol) (n = 612). Reduction of body temperature and level of discomfort. Administration of tepid sponging and antipyretic drug resulted in rapid reduction of temperature in the initial 30 min as compared to antipyretic drug alone. However, by the end of two hours, both the groups had reached the same degree of temperature. Besides, the children in tepid sponging and antipyretic drug group had significantly higher discomfort than only antipyretic drug group. Apart from initial reduction of temperature , addition of tepid sponging to antipyretic drug does not offer any benefit rather it may result in additional discomfort especially in younger children.

INTRODUCTION

Fever is a common childhood problem faced by health care personnel including doctors, nurses and others in both hospital and community settings. However, the nursing management of fever in children is often not based on research and remains inconsistent in practice[1,2]. Several methods have been recommended to reduce fever in children, which include tepid sponging, fanning, alcohol sponging and antipyretics. However, controversy surrounds the use of tepid sponge for reduction of fever. The effectiveness of tepid sponging as a treatment alongside antipyretic varies between studies, with some finding that it is of no benefit[3] and others suggesting that it is helpful[4].

MATERIALS AND METHODS

Study was conducted at pediatrics department, Belgaum Institute of Medical Sciences, Belagavi, Karnataka, India. Subjects were Children in the age group of 6 months-12 years, presenting with fever (axillary temperature $\geq 37^0$ celsius[5]. Children more than 390° celsius fever, who had received antipyretic drug within past5 hours[6] or clinically unstable child were excluded. A written informed consent was obtained from the parents. A minimum sample of 589 in each group had a 80% power and the power of test was 0.84.

The children were randomized to receive tepid sponging and antipyretic drug or only antipyretic drug. The initial temperature checking time was considered as 0 minutes. If the child belonged to the group of tepid sponging and antipyretic group, syrup/tablet paracetamol 15 mg/kg was administered and sponged for 15 minutes. Tepid sponging procedure: Required materials 5 sponge towels, a basin, mackintosh, 2 bath towels, clinical thermometer, bath thermometer, heater and water of temperature (between 29.1^0 celsius to 37.4^0 celsius)[7,8].

Entire procedure carried out by a trained personnel (a nursing staff or a house surgeon or on duty doctor). Temperature of the child known by placing the thermometer in either the oral cavity or in the axilla or inside the rectum, a long mackintosh was spread under the child. After assuring privacy, the child was undressed and covered with a top sheet. A sponge was used to dab over the face and neck without touching the eyes and kept at the edge of the basin. A second sponge was used to dab one arm starting from the acromion process and proceeding laterally till the fingers and then medially reaching the axilla. The sponged cloth was left in the axillary pit. The same was done for the other arm. For the legs, a sponge cloth was used to dab from the groin proceeding laterally till the feet and then medially reaching the groin. The sponged cloth was left in the fold of the groin. The abdomen and back was dabbed with the first sponge kept at the edge of the basin. The whole procedure was completed in 15 minutes, when the child was dabbed dry[7]. At 15 minutes point, temperature was checked and if it continued to be $>37^0$celsius, sponging was administered for another 15 minutes. Later temperature was checked at 30, 45, 60, 90 and 120 minutes. Children in the only antipyretic drug group received only paracetamol (15mg/kg) at 0 minutes and subsequently temperature was monitored at similar intervals. The level of discomfort of children was also assessed in terms of 3 criteria-crying, restlessness and irritability. The reduction of body temperature was statistically analyzed using student paired and unpaired t-test and level of discomfort was assessed using chi square test.

RESULTS AND DISCUSSIONS

1198 children were studied, 586 in the tepid sponging and antipyretic drug group and 612 children in the only antipyretic drug group. The baseline characteristics are shown in (Table 1). The mean temperature of both groups at different time intervals is depicted in the graph (Fig.1). Tepid sponging and antipyretic drug group was associated with faster reduction of temperature in the initial 30 minutes from the start followed by slower decline where as in antipyretic drug group, steady reduction of temperature throughout was noticed. But at the end of two hours, ultimate reduction of temperature in both groups was same.

Significantly higher level of discomfort was noticed in tepid sponging and antipyretic drug group. Discomfort assessment was done using chi square test and the p value was 0.001 which is

statistically significant and this discomfort was found to be more among younger children especially below 5 yrs of age as shown in (Table 3).

Fever is an increase in body temperature due to an elevated thermoregulator set point temperature. The preoptic anterior region of the hypothalamus is the center of the body's thermoregulator system. It is accountable for maintaining the body at a specic set point temperature. The hypothalamus causes an in increase in prostaglandin E2 (PGE2), therefore elevating the thermoregulator set point and increasing

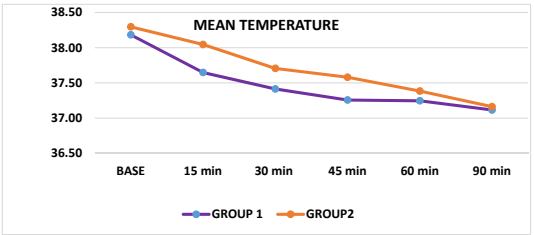

Fig 1 :Mean temperature of tepid sponging and antipyretic drug group (Group-1) and only antipyretic drug (Group-2) at different time intervals.

Table 1 : Group -1-Tepid sponging and antipyretic, Group 2-antipyretic alone

	Group 1		Group 2	
Gender	**Number**	**Percentage**	**Number**	**Percentage**
FEMALE	290	49.49	305	49.84
MALE	296	50.51	307	50.16
TOTAL	586	100.00	612	100.00

Table: 2 Baseline characteristics

	Group 1		Group 2	
Age (yrs)	**NUMBER**	**Percentage**	**Number**	**Percentage**
0.5-2.0	64	10.92	119	19.44
3.0-6.0	133	22.70	184	30.07
7.0-12.0	389	66.38	309	50.49
TOTAL	586	100.00	612	100.00

Table 3 : Group 1 - Tepid sponging and antipyretic, Group 2-antipyretic alone.

	Group 1		Group 2	
Age group(yrs)	**No.**	**Discomfort %**	**No.**	**Discomfort %**
0.5-2.0	64	10.92	34	5.56
3.0-6.0	152	25.94	16	2.61
7.0-12.0	Nil	0	1	0.16

heat conservation and production, resulting in fever[9]. Tepid sponging is one of the physical methods which is commonly being practiced in hospitals for reduction of temperature. Several studies have been done to compare the efficacy of these methods. Few studies have shown that addition of tepid sponging with antipyret IC drug is more effective than only antipyretic drug for treatment of fever among febrile children[10,11-17]. Studies on drug placebo and physical methods had concluded that tepid sponging has a role in reducing fever among children[18,19].Axelford P concluded that physical cooling methods are clearly indicated for the treatment of hyperthermia, but their use for the treatment of fever remains controversial because of their propensity to induce cutaneous vasoconstriction, shivering, sympathetic activation and, perhaps most importantly discomfort[7]. Few other studies concluded that there was no difference in reduction of temperature between the two groups[3,4,20] we in our study observed that there was no significant difference in reduction of temperature after administration of tepid sponging along with antipyretic drug as compared to antipyretic drug alone we observed that administration of tepid sponging and antipyretic drug resulted in rapid reduction of temperature in the initial 30 minutes as compared to antipyretic drug alone., however, by the end of two hours, both the groups had reached the same degree of temperature.

CONCLUSION

There was no difference in ultimate reduction of temperature between the two groups. Our findings are supported by Thomas *et al.*[7] and Chetak *et al.*[9] Children in tepid sponging and antipyretic drug group had a higher level of discomfort than only antipyretic group and these findings are supported by Thomas *et al.*[7], Sharber[4] and Chetak *et al.*[9].

REFERENCES

1. Watts, R., J. Robertson and G. Thomas, 2003. Nursing management of fever in children: A systematic review. Int. J. Nurs. Pract., Vol. 9 .10.1046/j.1440-172x.2003.00412.x.
2. Gildea, J.H., 1992. When fever becomes an enemy. Pediatr. Nurs., 18: 165-167.
3. Newman, J., 1985. Evaluation of sponging to reduce body temperature in febrile children. Can. Med. Assoc. J., 132: 641-642.
4. Sharber, J., 1997. The efficacy of tepid sponge bathing to reduce fever in young children. Am. J. Emerg. Med., 15: 188-192.
5. Maiya, P.P., 2013. Fever and fever of unknown origin. In: IAP Textbook of Pediatrics,, Parthasarathy, A., M.K.C. Nair, R. Agrawal, T.U. Sukumaran, P.S.N. Menon and P. Gupta, (Eds.)., Jaypee Brothers Medical Pub,, New Delhi, India, ISBN-13: 9789350259450, pp: 213-217.
6. Tripathi, K.D., 2008. Essentials of Medical Pharmacology. 6th Edn., Jaypee Brothers Medical Publishers,, New Delhi, India, ISBN-13: 9788184480856, Pages: 956.
7. Thomas, S., C. Vijaykumar, R. Naik, P.D. Moses and B. Antonisamy, 2009. Comparative effectiveness of tepid sponging and antipyretic drug versus only antipyretic drug in the management of fever among children: A randomized controlled trial. Indian Pediatr., 46: 133-136.
8. Nancy, M.S.J., 2006. Stephanie's Priniciples and practice of nursing.
9. Chetak, K.B., P.S. Gowri and M.D. Ravi, 2018. Effectiveness of antipyretic with tepid sponging versus antipyretic alone in febrile children: A randomized controlled trial. J. Nepal Paediatr. Soc., 37: 129-133.
10. Purssell, E., 2000. Physical treatment of fever. Arch. Dis. Childhood, 82: 238-239.
11. Kinmonth, A.L., Y. Fulton and M.J. Campbell, 1992. Management of feverish children at home. BMJ, 305: 1134-1136.

12. Mahar, A.F., S.J. Allen, P. Milligan, S. Suthumnirund, T. Chotpitayasunondh, A. Sabchareon and J.B.S. Coulter, 1994. Tepid sponging to reduce temperature in febrile children in a tropical climate. Clin. Pediatr., 33: 227-231.
13. Athirarani, M.R., 2013. Warm sponging versus tepid sponging in febrile children: Double blind randomized controlled trial of efficacy. Int. J. Nurs. Care, 1: 16-20.
14. Friedman, A.D. and L.L. Barton, 1990. Efficacy of sponging vs acetaminophen for reduction of fever. Pediatr. Emerg. Care, 6: 6-7.
15. Barkin, R.M. and G.L. Caputo, 1997. Pediatric Emergency Medicine: Concepts and Clinical Practice. 2nd Edn., Mosby,, Maryland Heights, Missouri, USA., ISBN-13: 9780815110026, Pages: 1269.
16. De, A. and P. Roy, 2021. Hybrid digitally guided hemorrhoidal artery ligation with laser hemorrhoidoplasty: Our experience with a new approach to hemorrhoidal disease. Int. Surg. J., 8: 2968-2973.
17. Meremikwu, M.M. and A. Oyo-Ita, 2003. Physical methods versus drug placebo or no treatment for managing fever in children. Cochrane Database Syst. Rev., Vol. 2003 .10.1002/14651858.cd004264.
18. Axelrod, P., 2000. External cooling in the management of fever. Clin. Infect. Dis., 31:
19. Hunter, J., 1973. Study of antipyretic therapy in current use. Arch. Dis. Childhood, 48: 313-315.
20. Alves, J.G.B., N.D.C.M. de Almeida and C.D.C.M. de Almeida, 2008. Tepid sponging plus dipyrone versus dipyrone alone for reducing body temperature in febrile children. Sao Paulo Med. J., 126: 107-111.