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A COMPARISON OF LOCAL ANAESTHETICS LIKE AMETHOCAINE VS LIDOCAINE AND PRILOCAINE FOR VENIPUNCTURE

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ABSTRACT

There have been contrasting findings of recent comparative reviews of the standard of anaesthesia. There was no statistical difference between the two formulations as both preparations were administered to adults for the prescribed duration for maximum anaesthesia. However, when applied to infants, Amethocaine gel tended to have superior anaesthesia for a time shorter than that recommended for lidocaine + prilocaine. It has been shown that topical local anaesthetic agents alleviate the pain caused by children during venepuncture and venous cannulation. Lidocaine + prilocaine has been available for many years and requires a minimum of 60 minutes of application time. The goal of our research was to determine the efficacy of 4% amethocaine against lidocaine 2.5% percent and prilocaine 2.5%, in paediatric patients undergoing local anaesthesia. In this study, 72% of children in the amethocaine group had either no reaction or a slight facial grimace to cannulation, compared with 55% of children in the Lidocaine + prilocaine group. Overall, the children showed slightly less discomfort in the amethocaine group than in the Lidocaine + prilocaine group.

Keywords: Amethocaine, Local Anaesthesia, Efficacy, Lidocaine.

INTRODUCTION

There have been contrasting findings of recent comparative reviews of the standard of anaesthesia [1]. There was no statistical difference between the two formulations as both preparations were administered to adults for the prescribed duration for maximum anaesthesia [2]. However, when applied to infants, Amethocaine gel tended to have superior anaesthesia for a time shorter than that recommended for lidocaine + prilocaine [3]. It has been shown that topical local anaesthetic agents alleviate the pain caused by children during venepuncture and venous cannulation [4]. Lidocaine + prilocaine has been available for many years and requires a minimum of 60 minutes of application time [5]. A more modern preparation, 4% w/w amethocaine gel base

preparation, has been shown to provide a quicker onset of maximal anaesthesia of 30-45 minutes [6].

Grommet injection in adults is usually done in an outpatient clinic under local anaesthesia. There are a number of local anaesthetics in use. For myringotomy and grommet injection, a eutectic combination of local anaesthetic cream, a mixture of lidocaine 2.5 percent and prilocaine 2.5 percent, was used. The lateral surface of the tympanic membrane is anaesthetized, allowing the insertion of a breathing tube into the middle ear. 4% tetracaine (amethocaine) which was introduced as a topical anaesthetic for delivering local anaesthesia during venepuncture in children more than 2 decades ago. Amethocaine has increasingly been used in otology, providing local anaesthesia for insertion of grommets [7].

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AIM:

The goal of our research was to determine the efficacy of 4% amethocaine against lidocaine 2.5% percent and prilocaine 2.5%, in paediatric patients undergoing local anaesthesia.

METHODOLOGY:

60 children undertaking a number of normal and emergency treatments were observed after receiving ethics committee support and informed parental verbal consent. Thirty boys and 30 girls, aged between 1 and 15 years, were automatically assigned to receive either 4 percent amethocaine or 2.5 percent lidocaine and 2.5 percent cream prilocaine. The arrangements were applied and sealed with an occlusive dressing on the dorsum of the hands and/or feet. The planning was eliminated before the child was expected to go to the theater, and both the length of application and any local skin response were recorded. The discomfort endured by the infant during venous cannulation was measured using a five point therapeutic scale by either the paediatric nurse or the anaesthetist, who were blinded to the topical anaesthetic used.

RESULTS & DISCUSSION:

Well paired were the 4 percent amethocaine and lidocaine 2.5 percent + prilocaine 2.5 percent classes. The application times, time to cannulation, and number of cannulation attempts are shown in Table 1. These findings, using the corrected Yates test, were not substantially different.

Lidocaine + prilocaine at the application site produced significantly more blanching ($p < 0.0001$) and amethocaine produced significantly more erythema ($p < 0.018$). No cases of hypersensitivity to either preparation have arisen. The pain scores observed varied greatly between the two groups, with less reaction to cannulation in the amethocaine group than in the Lidocaine + prilocaine group ($p < 0.05$; table 2). This finding has not been altered to remove children who had more than one cannulation attempt or children whose cannulation happened later than four hours after the application of Lidocaine + prilocaine or five hours after the application of amethocaine. Using the Mann-Whitney test, these data were analysed.

The findings of this research indicate that all topical anaesthetic preparations have successful venous cannulation anaesthesia in infants. In this study, 72% of children in the amethocaine group had either no reaction or a slight facial grimace to cannulation, compared with 55% of children in the Lidocaine + prilocaine group. Overall, the children showed slightly less discomfort in the amethocaine group than in the Lidocaine + prilocaine group.

Table 1: Application And Cannulation of Local Anaesthetics

	Amethocaine (Mean SD)	Lidocaine 2.5 % + prilocaine 2.5 % (Mean SD)
Age (y)	6.8 (4.0)	8.0 (4.0)
Application time (h)	2.04 (1.0)	1.93 (1.0)
Time to venous cannulation (h)	2.25 (1.1)	2.10 (1.1)
Gauge of cannula	20.7	21
Number of attempts at cannulation	1.9	1.2

Table 2. Behavioural Distress Scale Result Observations

Behavioural score	Number of children	
	Amethocaine 4%	Lidocaine 2.5% + prilocaine 2.5%
No response	15	11
Mild facial grimace	5	7
Verbal response		
Crying	4	6
Withdrawal of hand	6	6

CONCLUSION:

The findings of this study support previous studies that in a slightly higher proportion of infants, amethocaine

gel offers more effective anaesthesia for venous cannulation than Lidocaine + prilocaine cream.

REFERENCES

1. Bishai, R., Taddio, A., Bar-Oz, B., Freedman, M. H., & Koren, G. (1999). Relative efficacy of amethocaine gel and lidocaine-prilocaine cream for Port-a-Cath puncture in children. *Pediatrics*. <https://doi.org/10.1542/peds.104.3.e31>.
2. O'Brien, L., Taddio, A., Lyszkiewicz, D. A., & Koren, G. (2005). A critical review of the topical local anesthetic amethocaine (Ametop™) for pediatric pain. In *Pediatric Drugs*. <https://doi.org/10.2165/00148581-200507010-00004>.
3. Newbury, C., & Herd, D. W. (2009). Amethocaine versus EMLA for successful intravenous cannulation in a children's emergency department: A randomised controlled study. *Emergency Medicine Journal*. <https://doi.org/10.1136/emj.2008.065110>.
4. Olday, S. J., Walpole, R., & Wang, J. Y. Y. (2002). Radial artery cannulation: Topical amethocaine gel versus lidocaine infiltration. *British Journal of Anaesthesia*. <https://doi.org/10.1093/bja/88.4.580>.

5. Zaric, D., Christiansen, C., Pace, N. L., & Punjasawadwong, Y. (2005). Transient neurologic symptoms after spinal anesthesia with lidocaine versus other local anesthetics: A systematic review of randomized, controlled trials. In *Anesthesia and Analgesia*. <https://doi.org/10.1213/01.ANE.0000136844.87857.78>.
6. Van Kan, H. J. M., Egberts, A. C. G., Rijnvos, W. P. M., Ter Pelkwijk, N. J., & Lenderink, A. W. (1997). Tetracaine versus lidocaine-prilocaine for preventing venipuncture- induced pain in children. *American Journal of Health-System Pharmacy*. <https://doi.org/10.1093/ajhp/54.4.388>.
7. Cárceles, M. D., Alonso, J. M., García-Muñoz, M., Nájera, M. D., Castaño, I., & Vila, N. (2002). Amethocaine-lidocaine cream, a new topical formulation for preventing venopuncture-induced pain in children. *Regional Anesthesia and Pain Medicine*. <https://doi.org/10.1053/rapm.2002.30681>.