

TO STUDY AND EVALUATE THE EFFICACY OF ORAL THEOPHYLLINE IN ADDITION TO OTHER CONSERVATIVE MEASURES FOR THE TREATMENT OF PDPH.

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Abstract

To provide analgesia in patients developing PDPH and to study the quality and efficacy of oral Theophylline as an addition to other conservative treatment used for PDPH.

Keywords: Efficacy, Oral, Theophylline, PDPH.

Introduction

Spinal Anesthesia has numerous advantages over general anesthesia. Being safe, early recovery, better pain control, less need of systemic analgesics, no risk of pulmonary aspirations etc are some of the benefits. However, some complications have been reported for spinal anesthesia.¹ Post dural puncture headache is one of the complication of this procedure. However it is important for the anesthesiologist to cure PDPH. In a teaching institute because of the use of large gauze spinal needle by the beginners, PDPH is the most frequent complication encountered.²

Theophylline is a group of methylxanthines, which acts on cerebral adenosine receptors as a antagonists, that in turn lead to vasoconstriction, which reverses the compensatory cerebral vasodilatation that occurs in response to low CSF pressure and volume.³

On this hypothesis, that administration of oral Theophylline is effective in treating PDPH painful symptoms and moreover It is a easy, rapid, noninvasive treatment for PDPH, we conducted this study on patients suffering from PDPH.⁴

Material and Methods:

The study was conducted in Index Medical College Hospital and Research Centre during the period of September 2018 to February 2020, 40 Patients between 18-40 years classified as ASA I/II scheduled for surgeries under spinal anesthesia suffering from Post Dural Puncture Headache.

Exclusion Criteria:

1. Patient's refusal
2. Patient having allergic reactions or contraindication to use of theophylline, NSAID, Caffeine.
3. Patient having history of migraine, clusterheadache, or previous neurological disorder.

4. Patient of more than 40 years or belonging to ASA III or more with co morbid diseases.

Written informed consent was obtained from the patient. The study population was randomly allocated into 2 groups with 20 patients in each group. Group I received a tablet of 300mg Theophylline every 8 hourly in addition to conservative measures such as bed rest in supine position without head pillow, caffeine containing beverages, a NSAID (TDS). Group II received only conservative measures. For measuring the severity of headache we applied Visual Analog scale. The pain scale consisted of a 10 cm horizontal line marked from 0 (denoting no pain) to 10 (denoting worst possible imaginable pain). Its intensity was recorded at baseline and then at 0 hour, 8 hour, 16 hour and 24 hour.

Results

Table 1: Age Distribution

S. No.	Age	No.	Percentage
1.	18-25	07	17.5
2.	26-32	19	47.5
3.	33-40	14	35

Table 2: Sex Distribution

S. No.	Sex	No.	Percentage
1.	Female	23	57.5
2.	Male	17	42.5

Table 3: The VAS at 2, 6, and 12 hrs after treatment in the two groups

S. No.	Headache Vas Score	Theophylline+ Conservative Treatment (N = 30)	Conservative Treatment (N=30)	P-value
1.	0 hrs	7.21 ± 1.18	7.4 ± 1.57	0.081
2.	2 hrs	5.02 ± 1.53	5.94 ± 1.25	0.01
3.	6 hrs	3.39 ± 1.76	4.42 ± 1.41	0.03
4.	12 hrs	2.48 ± 2.33	4.43 ± 1.92	0.005
5.	24 hrs	0.0 ± 0.0	2.6 ± 2.14	0.024

Discussion

For PDPH persistence (primary outcome), intravenous caffeine sodium benzoate showed a significant decrease in the proportion of participants with PDPH persistence when compared with placebo.

For the changes in pain severity scores outcome, gabapentin⁵ showed a significant decrease in pain scores when compared to placebo, with differences at one, two and three days and decreased after four days of the intervention. Gabapentin⁵ also showed in 2011 a significant decrease in pain scores when compared to ergotamine plus caffeine at two, three and four days.⁶ Hydrocortisone showed a significant decrease in pain scores when compared with conventional care in Noyan 2007⁷, with differences that were sustained at six and 24 hours and decreased after 48 hours of the intervention. Hydrocortisone also showed in a significant decrease in pain scores when compared with placebo at six, 24 and 48 hours of follow-up. Theophylline showed a significant decrease in pain scores when compared with acetaminophen at two, six and 12 hours when theophylline was compared with conservative treatment at eight, 16 and 24 hours. Theophylline showed a significant lower mean sum of pain when compared with placebo.

The minimum clinically significant difference in acute pain VAS score has been poorly investigated, although some published studies have estimated it to be around 9 to 17 on a 0 to 100 VAS score. RCTs included in this review with statistically significant mean differences in VAS scores reported numbers around 2 to 4 on a 0 to 10 VAS score, giving these values a clinically significant difference.⁸

Conclusion

From our study, we can conclude that Oral Theophylline is a safe and effective medical therapy for the treatment of post dural puncture headache. It provides good quality of analgesia with no side effects. It decreases the intensity of pain better than the usual conservative measures. It can be taken with ease, and is cost effective as compared with the invasive therapy. Therefore Theophylline should be added as a adjunct with the conservative measures in treating post dural puncture headache.

References

1. Ahmed SV, Jayawarna C, Jude E: Post lumbar puncture headache: diagnosis and management. *Postgrad Med J*; 2006, 82(973):713-716.
2. Olesen J, Steiner TJ: The International classification of headache disorders, 2nd edn (ICDH-II). *J Neurol Neurosurg Psychiatry*; 2004, 75(6):808-811.
3. Kokki M, Sjovald S, Kokki H. Epidural blood patches are effective for postdural puncture headache in pediatrics – a 10- year experience. *Paediatric Anaesthesia* 2012; 22:1205-1210.
4. Hakim SM. Cosyntropin for prophylaxis against postdural puncture headache after accidental dural puncture. *Anesthesiology* 2010; 113:413-420.
5. Wagner Y, Storr F, Cope S: Gabapentin in the treatment of post-dural puncture headache: A case series. *Anaesth Intensive Care* 2012;40:714–718.
6. Kupper TE, Strohl KP, Hoefer M, Gieseler U, Netzer CM, Netzer NC. Lowdose theophylline reduces symptoms of acute mountain sickness. *Journal of Travel Medicine* 2008;15:307-314.
7. Noyan Ashraf MA, Sadeghi A, Azarbakht Z, et al: Hydrocortisone in post-dural puncture headache. *Middle East J Anesthesiol* 2007;19:415–422.
8. Sadashivaiah J, McClure H: 18-g Tuohy needle can reduce the incidence of severe post dural puncture headache. *Anaesthesia* 2009;64: 1379–1380.