Original Article

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A Comparative Study Between Chlorpheniramine Maleate vs Cetirizine in Prevention of Intrathecal Morphine Induced Pruritusin Patients Undergoing Caesarean Section

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Abstract

Background and Objectives: Morphine has been used spinally for postoperative pain management for long time. However post-operative nausea, vomiting and pruritus are some of the common adverse effects of it.The incidence of pruritus being 20-100%, the prevention of pruritus remains a major challenge. This study was conducted tocompare the efficacy of chlorpheniramine maleate versus cetirizine in prevention of post-operative pruritus in patients receiving intrathecal morphine for lower segment caesarean section.

Methods: 60 parturients undergoing caesarean delivery were randomly allocated in 2 groups. All patients received intrathecal bupivacaine with 100mcg morphine. One group of patients received Inj chlorpheniramine maleate 45.5mg IV and in other group oral tablet cetirizine 10mg was used as antipruritic prophylaxis.

Results: Inspite of antipruritic prophylaxis the overall incidence of pruritus was high in both the groups, but it was statistically higher in cetirizine group of patients (90%) when compared to CPM group (46.7%) p value =0.001.The number of patients requiring treatment were more in cetirizine group(66.7%) when compared to CPM group(57.1%), in whom pruritus was treated with Inj.Dexamethasone 8mg IV.

Conclusion: Inj chlorpheniramine maleate is better when compared to oral tablet cetirizine but neither Inj. chlorpheniramine maleate nor tab cetirizine are useful in prophylaxis of intrathecal morphine induced pruritus in patients undergoing lower segment caesarean section.

Keywords: Intrathecal morphine; Inj chlorpheniraminemaleate; Cetirizine; Pruritus; Antihistamines.

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Introduction

Neuraxial opioids are one of the most frequently used methods of analgesia after caesarean delivery and other surgical procedures. The beneficial effect of neuraxial opioids used either alone or in combination with the local anesthetics is to augment and prolong intraoperative and postoperative analgesia.[1] Intraoperative administration of spinal opioids reduce the need for systemic opioids postoperatively.[2] As, a single dose of spinally administered narcotic can provide substantial pain relief up to 18 to 24 hours postoperatively.[3] Hydrophilic opioids such as morphine provide excellent selective spinal analgesia because of small volume of distribution and slow clearance from the spinal cord.[4] Morphine has been used spinally

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for postoperative pain management for long time.[5] However post-operative nausea, vomiting and pruritus are some of the common adverse effects of it. The incidence of post-operative nausea, vomiting in patients with intrathecal opiate is 60-80% and pruritus is 20-100%.[6] Anti-emetics and anti-pruritic drugs are generally used to mitigate these effects. Although many studies have been done to prevent these side effects, prevention of post-operative pruritus remains a major challenge.

Objective of The Study

To compare the efficacy of chlorpheniramine maleate versus cetirizine in prevention of post-operativepruritus in patients receiving intrathecal morphine for lower segment caesarean section.

Materials and Methods

Inclusion criteria:

- Parturients in age group of 18-35years
- ASA grade II
- Elective caesarean section

Exclusion criteria:

- Patients who don't give valid consent
- ASA Grade III and IV patients
- Patients age less than 18 years and above 35 years
- Partuients with bad obstetric history

After obtaining approval from institutional ethics review board and written informed consent taken, we conducted our study on 60 patients who underwent LSCS during the period between November 2018 and November 2019.

Patients were allocated in one of the two groups using computer generated random allocation.

A thorough pre-anaesthetic check-up was done for all patients. Patients were instructed to be nil per oral, 6 hours for solids and 4 hours for liquids before the surgery.

After shifting to operation theatre, an 18 G IV access was obtained. Standard monitors like pulse oximeter, ECG and NIBP were connected and baseline vitals were noted. Subarachnoid block was performed in left lateral position at L3-L4 space using 26G Quincke Babcock spinal needle. All patients received intrathecal Injection of 2ml of 0.5% hyperbaric bupivacaine with 100mcg morphine.

After extraction of baby, Group A patients received intravenous chlorpheniramine maleate 45.5mg for post-operative pruritus.

In Group B patients oral tablet cetirizine 10 mg was given in the preoperative room with sips of water, 5 minutes prior to shifting the patient to operation theatre.

Postoperatively all the patients were shifted to recovery room.

Failure of pruritic prophylaxis was defined as any episode of itching that provokes the desire to scratch or use of rescue antipruritic.[6]

Pruritus was scored as[6]

Grade 0- no pruritus

Grade 1 – pruritus not requiring treatment

Grade 2 – pruritus requiring treatment.

In our study we used Injection Dexamethasone 8 mg IV as rescue antipruritic agent in grade II patients.

Statistical analysis: Categorical data were presented as frequency distributions and numeric data were represented as mean and standard error of mean. Statistical comparison between treatment groups was done by using Students t-test, Chi square test and Fischer's exact test. $P<0.05$ was considered statistically significant. Statistical analysis was performed with the SPSS (statistical package for social sciences) version 16.

Results

There was no significant age group difference in both the groups.

Table 1: Age Distribution.

	Group		Total
Age	1	2	
19-24	12(40%)	15(50%)	27(45%)
25-30	13(43.3%)	15(50%)	28(46.7%)
31-35	5(16.7%)	0(0%)	5(8.3%)
Total	30(100%)	30(100%)	60(100%)

Graph 1: Age Distribution.

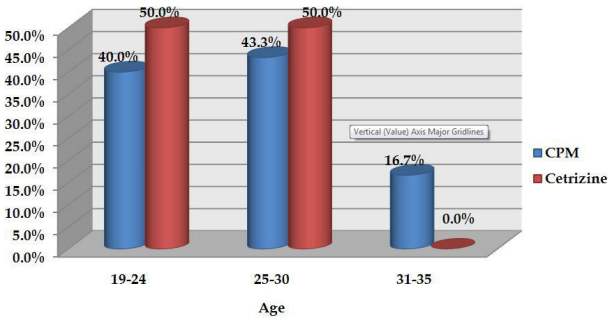


Table 2: Mean age group difference.

Group	N	Mean	Std. Deviation
CPM	30	26.13	4.289
Cetirizine	30	24.57	2.921

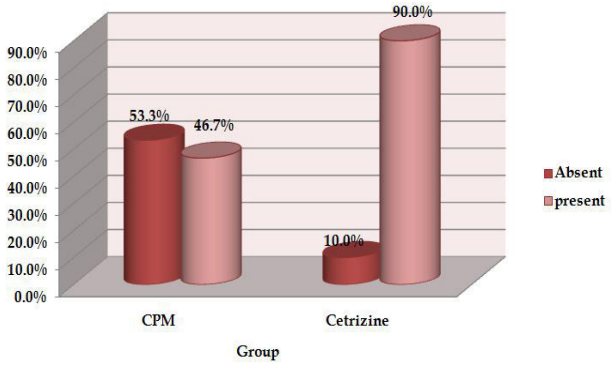
t= 1.65 p= 0.104(NS)

Table 3: Incidence of Pruritus in both groups.

Pruritus	Group		Total
	CPM	Cetirizine	
Absent	16(53.3%)	3(10%)	19(31.7%)
present	14(46.7%)	27(90%)	41(68.3%)
Total	30(100%)	30(100%)	60(100%)

χ^2 =13.02 p= 0.001 (Sig)

Graph 2: Incidence of Pruritus.



[Here Unpaired t-test, Chi square test and Fisher's exact test are applied to find out the significance of the difference between the two groups at 5% level of significance.]

The overall incidence of pruritus was high in both the groups, but it was statistically higher in cetirizine group of patients (90%) when compared to CPM group (46.7%).

Table 4: Comparison based on grading of pruritus.

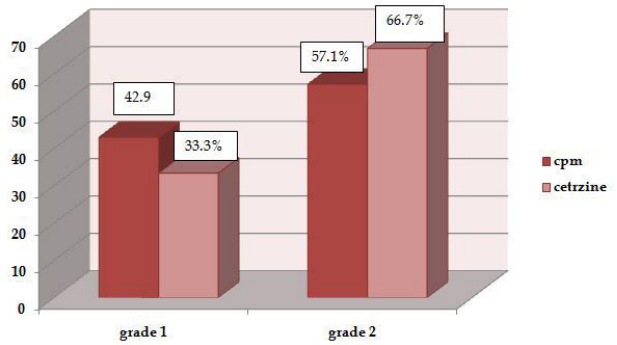
Grade	Group		Total
	CPM	Cetirizine	
1	6(42.9%)	9(33.3%)	15(36.6%)
2	8(57.1%)	18(66.7%)	26(63.4%)
Total	14(100%)	27(100%)	41(100%)

χ^2 =0.36 p= 0.55(NS)

Grade I pruritus was more in CPM group (42.9%) when compared to cetirizine group (33.3%).

Grade II pruritus was more in cetirizine group (66.7%) when compared to CPM group(57.1%), in whom pruritus was treated with Inj. Dexamethasone 8 mg IV.

Graph 3: Comparison of grade 1 and grade 2 pruritus in both the groups.



Discussion

The addition of opioids to local anaesthetics is widely accepted in anaesthesiology practice in providing postoperative analgesia in patients undergoing spinal anaesthesia.[7] In patients undergoing caesarean section with spinal anaesthesia, intrathecal opioids are known to cause pruritus, nausea , vomiting, respiratory depression and urinary retention due to mu and kappa opioid receptor activation.[7] Pruritus is one of the most commonest side effect of intrathecal morphine and it is more likely to be localised to the face, neck and upper thorax.[8] Pruritus is described as a subjective unpleasant and irritating sensation that often promotes uncontrollable scratching.[1] Although pruritus is not a life-threatening complication,[9] but sometimes it is very distressing to the patient and needs to be treated.

The precise mechanism of pruritus after intrathecal morphine is not yet clear.

Fan[10] studied that morphine could activate serotonin 5HT3 receptors by a mechanism independent of opioid receptors.

Pruritus is more likely to occur in obstetric patients, due to interaction of oestrogen with opioid receptors.[8]

The basic objective of our study was to see the prophylactic prevention of pruritus by using antistamines like chlorpheniramine maleate and cetirizine. Anti-histamines are often used as first-line treatment, even though the role of histamine in opioid induced pruritus is controversial.[11] First generation H1 receptor antagonists such as diphenhydramine or hydroxyzine may produce a sedative effect, which could sometimes, be helpful in patients with pruritus.[1] Sedative properties of antihistamines may be helpful because they temporarily allow much needed sleep. They interrupt the itch-scratch cycle, but without

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relieving itch sensation.[12] Chlorpheniramine is a first generation anti-histamine whereas cetirizine being second generation antihistamine.[13]

There was no significant age group difference in both the groups (Table 1 and Table 2, Graph 1).

The overall incidence of intrathecal morphine induced pruritus was high inboth the groups, but significantly high in cetirizine group (90%, n=30) when compared to CPM group (46.7%, n=30) (Table 3 and Graph 2). The low incidence in CPM group can be attributed to the fact that Inj. CPM produces sedation. First generation antihsitamines cross blood brain barrier and produce CNS suppression effects.[14]

Also the number of patients requiring treatment for pruritus was more in cetirizine group 66.7% compared to 57.1% in CPM group (Table 4 and Graph 3).

We demonstrated that neither Inj. chlorpheniramine maleate nor tab cetirizine are effective in management of pruritus in these patients. However, the incidence of pruritus in CPM group of patients is less compared to cetirizine group probably because of the sedative effect of Inj. CPM.

Conclusion

From the above study it can be inferred that incidence of pruritus is high in patients receiving intrathecal morphine in spite of prophylactic treatment with antihistamines. Hence we conclude that neither Inj. chlorpheniramine maleate nor tab cetirizine are useful in prophylaxis of intrathecal morphine induced pruritus in patients undergoing lower segment caesarean section.

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