PERI-OPERATIVE SYNTOCINON INFUSION IN LSCS

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ABSTRACT

BACKGROUND

Oxytocin for the purposes of augmentation and induction of labour is one of the most frequently used medications in obstetrics. Recent studies show that oxytocin is used in over 50% of labouring women in some hospitals. Yet, there is tremendous variability in the dose and dosing interval in clinical practice.

The objective of this study was to evaluate peri-operative usage of syntocinon for all LSCS patients to augment better uterine contractions, and for minimising peri operative morbidity and mortality**.**

MATERIALS AND METHODS

200 patients of ASA grade I & II in the age group 20-35 years scheduled for both elective & emergency LSCS surgeries were divided randomly in two groups, Group NSI (Control) and Group SI (Test). 100 ml NS with 2 units of syntocinon was added and infusion was continued at the rate of 30 to 50 drops per minute, immediately after performing subarachnoid block in the test group. At 1 min, 2 min, 3 min, 5 min, parameters like heart rate, saturation, blood pressure, uterine tonicity and newborn APGAR score were recorded & compared with control group.

RESULTS

Both the groups were comparable in terms of Age & Parity. In terms of uterine tonicity, usage of vasopressor/ glycopyrrolate, blood loss & perioperative HCT, the p-value is <0.00001 & results are significant in test group in comparison with control group.

CONCLUSION

With this study we conclude that perioperative syntocinon infusion of 2 units in 100 ml NS (before the uterine incision and delivery of the baby) as a priming technique was found to be more beneficial in maintaining haemodynamic stability, good uterine contractions, minimal uterine blood loss, without alteration in APGAR scoring is noted.

KEY WORDS

Oxytocin, Blood Loss, Uterine Tone, APGAR.

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BACKGROUND

Oxytocin for the purposes of augmentation and induction of labour is one of the most frequently used medications in obstetrics[1]. Recent studies show that oxytocin[2,3] is used in over 50% of labouring women in some hospitals. Yet, there is tremendous variability in the dose and dosing interval in clinical practice.

Aims and Objectives-

1. To study the effects of syntocinon infusion before delivery with regard to
   - Perioperative hypotension.
   - Intra operative blood loss.
   - Post-partum bleeding.
   - Neonatal outcome.
2. To compare effects of syntocinon infusion in perioperative period (before delivery of baby) versus without syntocinon infusion for LSCS surgeries under subarachnoid block.

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MATERIALS AND METHODS

The present double blinded randomized controlled trial study which was carried out in the Department of Anaesthesiology, A.V.M.C & H, Puducherry after obtaining approval from ethics committee. The study was done on 200 patients of ASA grade I & II with age group 20-35 years scheduled for both elective & emergency LSCS surgeries. This sample size was taken for convenience.

Exclusion Criteria

- Known history of sensitivity to bupivacaine.
- Non-acceptance by patient.
- Body weight >110 kg and < 45 kg and height <145 cm.
- Peripheral or central neurological disease raised intracranial tension, valvular heart diseases, significant ECG changes, renal disease, endocrinal disease, metabolic disease, hepatic disease, coagulopathy and bleeding disorders.
- History of spinal cord surgery, vertebral deformities, infection at site of block.

Consent

Details of procedure were explained to all the patients during PAC and an informed consent was obtained.

Patient Grouping

Patients were blinded by sealed envelope technique and observer anaesthesiologist was kept unaware of which drug

was infused to which patient thus avoiding observer bias. The anaesthesiologist who performed the spinal anaesthesia and who infuse study drug took no further part in the study.

Selected 200 patients were divided randomly in to two groups depending upon the drug given

Group NSI (n=100) (Control)	100 ml NS without 2 units of syntocinon infusion was continued at the rate of 30 to 50 drops per minute. Immediately after performing subarachnoid block.
Group SI (n=100) (Test)	100 ml NS with 2 units of syntocinon was added and infusion was continued at the rate of 30 to 50 drops per minute, immediately after performing subarachnoid block.

Preparation of Patients

- All patients were uniformly premedicated with Inj. Ondansetron 4 mg IV before surgery.
- Intradermal sensitivity test of Sensoricaine Hydrochloride was performed.
- Preloading of 500 ml Ringer's lactate solution was started with 18 G Cannula, before start of anaesthesia.

Anaesthesia Technique

Baseline monitoring is done with ECG, pulse Oxymetry, Non-invasive blood pressure monitoring. Spinal anaesthesia was performed in sitting position at L3- L4 intervertebral space with 23G -25G Whitacare needle and 1.8 ml of (0.5,) bupivacaine Heavy spinal anaesthetic solution was given. After spinal anaesthesia in supine position wedge was kept for left lateral tilt, sensory level is optimized between T6- T8 was assessed by pinprick, first reading of ECG, saturation and blood pressure was recorded. 2 units of syntocinon[4,5] was added with 100 ml of NS solution and infusion was maintained as 30-40 drops per minute, 1 min, 2 min, 3 min, 5 min parameter of ECG, saturation, blood pressure, blood pressure, uterine tonicity and newborn APGAR score were recorded, after delivery of baby 10 units syntocinon was given I.M and 10 units with remaining RL infusion, haematocrit value was measured preoperative and immediately after skin closure.

Monitoring

Baseline observations preoperatively were started before intrathecal drug injection. Pulse rate, electrocardiogram, systolic and diastolic BP, respiratory rate, peripheral arterial haemoglobin oxygen saturation, uterine contraction, blood loss & baby Apgar score were monitored.

Criteria for-

(a) Bradycardia: a pulse rate of 60/min or less was treated by injection atropine/ glycopyrrolate IV.

(b) Hypotension: a fall in systolic BP 20% or greater from the base line value was treated by injection mephentermine IV, intravenous fluids (crystalloid, colloid and blood) as per requirement and oxygen by face mask.

(c) Respiratory Depression: a respiratory rate of less than 10 breaths per min or peripheral arterial haemoglobin oxygen saturation less than 85% was treated by oxygen supplementation through face mask.

Statistical Analysis

Demographic data and baseline measurements are presented as mean (SD) and group differences were tested using Chi square test and student t test, respectively. The software used was Sigma Stat 3.5.

RESULTS

With syntocinon group we observed in syntocinon group perioperative haemodynamic stability (No fall in blood pressure and bradycardia), better uterine contraction, and minimal blood loss and there is no alteration in neonatal APGAR score in relation with patients with non syntocinon group.

Age Distribution (In Years)	Group NSI (Control)	Group SI (Test)
20 -25	40	30
25-30	42	51
30-35	18	19
	100	100

Table 1. Peri-Operative Monitors (Age, Parity, Weight, Gestational Age and Peri-Operative HCT)

Age Wise Distribution of Patients

From our observation, Table No. 1 shows no significant difference in terms of AGE in Group SI compared with Group NSI. Hence the groups were comparable.

Parity	Group NSI (Control)	Group SI (Test)
G1	32	41
G2	50	43
G3	18	16
	100	100

Table 2. Parity

From our observation, Table No. 2 shows no significant difference in terms of PARITY in Group SI compared with Group NSI. Hence the groups were comparable.

Preoperative HCT	Group NSI (Control)	Group SI (Test)
8-10 gm	34	37
10-12 gm	52	57
above 12 gm	14	6
Total	**100**	**100**

Table 3. Peri-Operative HCT

From our observation, Table No. 3 shows no significant difference in terms of Preoperative HCT in Group SI compared with Group NSI. Hence the groups were comparable.

	Group NSI (Control)	Group SI (Test)
<70 mm of Hg	8	2
70 - 90 mm of Hg	12	72
90 - 120 mm of Hg	80	24
>120 mm of Hg	4	2
Total	**100**	**100**

Table 4. HR, Saturation, Blood Pressure and Blood Loss

From our observation, Table No. 4 shows significant difference in terms of Blood pressure in Group SI compared with Group NSI. ($p<0.00001$)

Heart Rate (in mins.)	Group NSI (Control)	Group SI (Test)
70-90	18	62
90-100	70	22
100-110	12	16
110-120	6	0
Total	**100**	**100**

Table 5. Pre-Operative HCT

Blood Loss (in ml)	Group NSI (Control)	Group SI (Test)
Less than 300 ml	40	76
300-450 ml	49	22
More than 450 ml	11	2
Total	**100**	**100**

Table 6. Blood loss

From our observation, Table No. 6 shows significant difference in terms of Blood Loss in Group SI compared with Group NSI. (p<0.00001)

	Usage of Vasopressor/ Glycopyrrolate
Group NSI (Control)	30
Group SI (Test)	5

Table 7. Peri-Operative Volume Replacement and Usage of Vasopressor

Uterine Tonicity	Group NSI (Control)	Group SI (Test)
Weak Contraction	30	5
Good Contraction	70	95

Table 8. Uterine Tonicity (2 min., 3 min., 5 min. and 10 mins.)

From our observation, Table No. 8 shows significant difference in terms of uterine tonicity in Group SI compared with Group NSI. (p<0.00001).

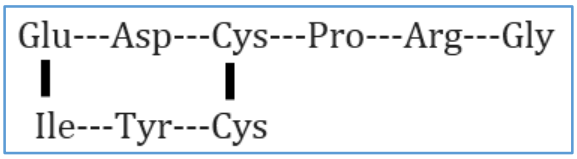
APGAR Scoring	Group NSI (Control)	Group SI (Test)
1 minute	8	8
2 minutes	9	9
5 minutes	9	9
10 minutes	10	10

Table 9. APGAR Scoring (1 min., 5 min. and 10 mins.)

From our observation, Table No. 9 shows no significant difference in terms of APGAR in Group SI compared with Group NSI. Hence the groups were comparable.

DISCUSSION

Oxytocin is a nine-amino acid peptide that normally is produced in the hypothalamus and secreted by the posterior pituitary in a spurting or pulsatile fashion. During normal pregnancy, serum oxytocin concentrations increase slightly throughout gestation, and there is only modest increase in total serum concentrations before labour[6]. However, with labour, plasma levels increase significantly and then peak in the second stage. Expression of oxytocin receptors increase in the decidua and myometrium in the weeks preceding the onset of labour and increase sharply just before labour.[7] Oxytocin receptors are expressed primarily in decidua, myometrium, and breast tissue. Myometrial sensitivity to oxytocin parallels expression of oxytocin receptors such that responsiveness begins at about 20 weeks' gestation and then dramatically increases at about 30 weeks' gestation. Oxytocin is cleared from peripheral blood by the liver and kidney and also is significantly metabolized by oxytocinase, an enzyme produced in abundant quantities by the placenta and gestational tissues.



The myometrial response to oxytocin is highly variable [8], and uterine hyperstimulation may occur at any dose of administered oxtocin[9], depending on the patient. A randomized study by Xenakis and co-workers compared the low dose protocol of Seitchik[10] to a higher dose protocol and there were no differences in maternal or neonatal outcome or in the incidence of hyperstimulation.[11]

It is well known that oxytocin produces uterine activity when administered to pregnant women. The role of endogenous oxytocin as an initiator of term or preterm labour is less well defined. Some reasons to suspect that oxytocin is a universal initiator of labour are its ability to induce labour. The number of myometrial cell membrane oxytocin receptors greatly increases as pregnancy advances, with a further increase during labour itself.

As we all know that giving spinal anaesthesia and conducting anaesthesia for elective as well as emergency LSCS is more challenging, starting from brief discussion about spinal anaesthesia, haemodynamic stability, control of uterine bleeding and better neonatal outcome. In that we consider of giving perioperative syntocinon infusion 2 units[12,13] in 100 ml NS (before the uterine incision[14] and delivery of the baby) as a priming technique to augment uterine contractions [15] and from our observation it is found to be more beneficial in maintaining haemodynamic stability[16] without much usage of inj. phenyl ephedrine and inj. glycopyrrolate. Good uterine contractions, minimal uterine blood loss in comparison with usual dose of syntocinon without alteration in APGAR scoring are noted.[17,18]

From our observation, Table No. 8 shows significant difference in terms of uterine tonicity in Group SI compared with Group NSI. (p<0.00001).

CONCLUSION

Pre-uterine-incision (before delivery of the baby) syntocinon infusion is very much useful in maintaining haemodynamic stability, leads to better uterine contractions, minimises blood loss, without altering neonatal outcome and so is beneficial for patients, anaesthesiologists as well as surgeons.

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