

Original Article

COMPARISON OF HEMODYNAMIC CHANGES CAUSED BY 2 UNITS VERSUS 5 UNITS OF OXYTOCIN DURING ELECTIVE CAESARIAN SECTION UNDER SPINAL ANAESTHESIA

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Objective: To compare the effects of 2 units and 5 units bolus doses of oxytocin on heart rate and mean arterial pressure during elective caesarian section under spinal anaesthesia.

Material and Methods: Randomized control study ,conducted over 6 months period on 150 patients at Maula Baksh Teaching Hospital Sargodha by dividing into 2 groups(group A & group B),through lottery method for randomization of oxytocin allocation.

Results: In our study, majority of the patients i.e. 45.33%(n=34) in Group-A and 38.67%(n=29) in Group-B were between 26-30 years of age, mean \pm SD was calculated as 27.85 \pm 3.54 years.,while 60%(n=45) in group A and 56%(n=42) in group B were between 37-39 wks of gestation ,mean \pm SD was calculated as 38.63 \pm 4.61wks.Blood loss in both groups shows insignificant difference by recording 187.43 \pm 18.65 ml in Group-A and 194.24 \pm 21.47 ml in Group-B, comparison of tachycardia in both groups was done which shows 32%(n=24) in Group-A and 61.33%(n=46) in Group-B while which shows a significant difference in both groups while hypotension was recorded as 4%(n=3) in Group-A and 17.33%(n=13) in Group-B, p value was calculated as <0.01.

Conclusion: We concluded that frequency of tachycardia and hypotension in patients administered with 2 IU bolus dose of oxytocin is significantly lesser as compared to 5IU bolus dose and there is no difference in the incidence of postpartum haemorrhage.

Key words: Caesarean section, postpartum haemorrhage, prevention, oxytocin, 2 units, 5 units bolus, hypotension, tachycardia.

Introduction

Oxytocin is the most commonly used uterotonic agent in obstetrics. It is routinely administered after both normal and operative delivery to initiate and maintain adequate uterine contractility for minimizing blood loss and preventing postpartum haemorrhage. Several regimens of oxytocin have been tested during caesarean delivery (CD) with variable wanted (uterotonic) and unwanted (cardiovascular) effects. It is a common practice to administer oxytocin as an intravenous (IV) bolus followed by IV infusion for adequate uterine contraction. Large doses of oxytocin injected rapidly is known to produce various adverse effects such as hypotension, nausea, vomiting, chest pain, headache, flushing, myocardial ischemia, ST-T segment changes, pulmonary edema, severe water intoxication, and convulsion.

Material & Methods

Randomized control study ,conducted over 6 months period on 150 patients at Maula baksh teaching hospital Sargodha by dividing into 2 groups(group A & group B),through lottery method for random- ization of oxytocin allocation, by non

probability purposive sampling ,from 1.11.2012 to 30.4.2013.

Results

A total of 150 (75 in each group) after fulfilling the inclusion/exclusion criteria were enrolled to compare the effect of 2 units and 5 units bolus doses of oxytocin on heart rate and mean arterial pressure during elective caesarean section under spinal anaesthesia and to compare the effect of 2 units and 5 unit bolus doses of oxytocin on amount of blood loss during elective caesarean section under spinal anaesthesia.

Age distribution of the patients was done which showed that 30.67%(n=23) in Group-A and 36%(n=27) in Group-B were between 20-25 years of age, 45.33%(n=34) in Group-A and 38.67%(n=29) in Group-B were between 26-30 years of age, while only 24%(n=18) in Group-A and 25.33%(n=19) in Group-B were between 31-35 years of age, mean and sd was calculated as Mean + SD: 27.85+3.54 years.

Blood loss in both groups was recorded which showed that in Group-A 187.43+18.65 ml while in Group-B 194.24+21.47 ml blood was lost.

Gestational age distribution of the patients was done which showed that 60%(n=45) in group A and

56%(n=42) in group B were between 37-39 wks of gestation, 40%(n=30) in group A and 44%(n=33) in group B were between 39-41 wks of gestation. Mean and SD was calculated as mean \pm SD 38.63 \pm 4.61wks. Comparison of tachycardia in both groups was done which showed 32%(n=24) in Group-A and 61.33%(n=46) in Group-B while 68%(n=51) in Group-A and 36.67% (n=29) in Group-B had no findings of tachycardia, p value was calculated as 0.000 which shows a significant difference in both groups. we compared hypotension in both groups, it shows 4%(n=3) in Group-A and 17.33%(n=13) in Group-B while remaining 96%(n=72) in Group-A and 82.67%(n=62) in Group-B had no hypotension, p value was calculated as 0.01.

Table-1: Blood loss, hypotension and tachycardia in both groups (n=150).

	Group-A (n=75)	Group-B (n=75)
Blood Loss (ml\pmSD)	187.43 \pm 18.65	194.23 \pm 21.47
Tachycardia		
Yes	24 (32%)	46 (61.33%)
No	51 (68%)	29 (38.67%)
Hypotension		
Yes	03 (04%)	13 (17.33%)
No	72 (96%)	62 (82.67%)

Discussion

There are no practice guidelines regarding oxytocin dosage and optimal dose remains unclear. It is common practice in Pakistan to use 5 or 10 IU intra venous bolus dose of oxytocin during elective caesarean delivery. However, we planned this study to compare the haemodynamic effects of 2 and 5IU boluses of oxytocin to determine which dose is associated with lesser haemodynamic disturbances without compromising sufficient uterine contraction, so that we can change our practice for safety of the patients and provide published data as none is available in this regard in our country.

In our study, majority of the patients i.e. 45.33%(n=34) in Group-A and 38.67%(n=29) in Group-B were between 26-30 years of age, mean \pm SD was calculated as 27.85 \pm 3.54 years, while 60%(n=45) in group A and 56%(n=42) in group B were between 37-39 wks of gestation mean \pm SD was calculated as 38.63 \pm 4.61wks. Blood loss in both groups shows insignificant difference by recording 187.43 \pm 18.65 ml in Group-A and 194.24 \pm 21.47 ml in Group-B, comparison of tachycardia in both groups was done which shows 32%(n=24) in

Group-A and 61.33%(n=46) in Group-B while which shows a significant difference in both groups while hypotension was recorded as 4%(n=3) in Group-A and 17.33%(n=13) in Group-B, p value was calculated as 0.01.

The findings of the study are in accordance with Sartain J B and co-workers, in their study after 1 min with 2IU oxytocin heart rate increased in 11 patients(27.5%) and mean arterial pressure decreased in none(0%) and with 5 IU heart rate increased in 23 patients(57%) and mean arterial pressure decreased in 6 patients(15%) respectively,⁵ which shows that during elective caesarean delivery giving more than 5IU intra venous bolus of oxytocin is not advantageous in preventing post partum haemorrhage.

The guidelines of the Royal College of Obstetricians and Gynaecologists (UK) on caesarean section recommend a slow intravenous bolus dose of 5 IU of oxytocin after delivery of the infant. This dose is based on the principles of active management of the third stage of labour¹² and is consistent with practice across most of Europe and Australia.¹³ In a survey of obstetricians and anaesthetists in the UK, the use of an oxytocin bolus was standard treatment, although the dose varied between 5 IU and 10 IU.¹⁴ In settings where an oxytocin bolus is used routinely, an additional infusion of oxytocin may be required if haemorrhage occurs. This practice has led some obstetricians to use an additional infusion of oxytocin on a selective or routine basis for high risk cases, despite a lack of evidence to support this practice.¹⁴

While results of this study are in favour of a low dose i.e In which shows a significantly low rate of hypotension and tachycardia while the blood loss in both groups were similar and insignificant and the hypothesis of the study that "Incidence of tachycardia and hypotension with 2 IU bolus dose of oxytocin is less as compared to 5IU bolus dose and there is no difference in the incidence of postpartum haemorrhage" is justified.

Further trials on this comparison may authenticate the results of the current study and we can change our practice for safety of the patients.

Conclusion

The frequency of tachycardia and hypotension in patients administered with 2 IU bolus dose of oxytocin is significantly lesser as compared to 5IU bolus dose and there is no difference in the incidence of postpartum haemorrhage.

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CORRIGENDUM

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