Original Article

Study on effects of Oxytocin intramuscular administration during third stage of labour

Malliga D[1*], Sudha R[2], Ashika Rith S[3]

[1,2]Associate Professor, [3]Resident, Department of Pharmacology, KAVP Government Medical College, Trichy - 1, Tamilnadu. Affiliated to Tamilnadu Dr MGR Medical University, Chennai, Tamil Nadu, INDIA.
Email: drmalligaduraipandian@yahoo.com

Abstract

Background and Objectives: Oxytocin is a hormone produced in supraoptic and preventricular nuclei of the hypothalamus and stored in posterior pituitary gland. It acts primarily a neuromodular in the brain. It plays a prime role particularly during and after child birth. Oxytocin is released in large amount after distention of the cervix and uterus during labour and facilitating birth. Hence the purpose of the study was to prove the efficacy and safety of oxytocin 10IU intramuscular administration on reducing the blood loss during third stage of labour. **Methods:** A prospective observational study was carried out in a teaching hospital. A total of n=112 antenatal cases were studied including both primi and multipara and blood loss measured after delivery of the placenta. Primary end point is measurement of blood loss and secondary end point ranged from severe postpartum haemorrhage (PPH) and maternal mortality and death. **Results and Conclusion:** Among 112 cases, two participants (1.8%) had PPH and 110 cases had no PPH (98.2%). So our conclude that oxytocin is the best uterotonic drug profile amongst the prophylactic drugs used, which strongly favors its routine use for active management of third stage of labour.

Keywords: Third stage labour, oxytocin, postpartum blood loss, postpartum haemorrhage.

[*]**Address for Correspondence:**
Dr. Malliga D, Associate Professor, Department of Pharmacology, KAVP Government Medical College, Trichy -1, Tamil Nadu, INDIA.
Email: drmalligaduraipandian@yahoo.com
Received Date: 14/01/2016 Revised Date: 20/02/2016 Accepted Date: 12/03/2016

Access this article online

Quick Response Code:

Website: www.statperson.com

DOI: 14 March 2016

INTRODUCTION

Oxytocin is mammalian neurohypophyseal hormone produced in supraoptic and preventricular nuclei of the hypothalamus by nerve axon and stored in posterior pituitary gland. Oxytocin acts primarily as a neuromodular in the brain. Oxytocin plays an important role particularly during and after child birth. It is released in large amount after distention of the cervix and uterus during labour and facilitating birth. PPH is the most serious complication in obstetric practice. The greatest number of maternal death from haemorrhage is due to PPH, which is almost entirely a preventable condition. PPH occurs in approximately 4% of vaginal deliveries and estimates are that it causes significant morbidity and 25% of all the maternal child birth related death.[1] The WHO defines PPH as blood loss of 500ml or more in first 24 hours of postpartum.[2] Postpartum blood loss is difficult to evaluate especially in developing countries like India, where most of the women are anemic with poor reserve and this conditions are further aggravated by increased demand during pregnancy and blood loss during third stage of labour.[3] The days of expectant management the so called 'Hands off' approach seems to be over, in view of serious consequences of PPH.[4] Hence an attempt was made to study the efficacy and safety of oxytocin 10IU intramuscular administration to reduce the blood loss during third stage of labour.

MATERIALS AND METHODS

Type of study: A prospective, observational study
Study period: Six months
Study population: n=112, antenatal cases both primi and multipara
Study centre: Tertiary care teaching hospital

METHODS

Women with singleton pregnancy between 37 and 42 weeks of gestation anticipated vaginal delivery, vertical

How to site this article: Malliga D, Sudha R, Ashika Rith S. Study on effects of Oxytocin intramuscular administration during third stage of labour. *MedPulse – International Medical Journal.* March 2016; 3(3): 285-287. http://www.medpulse.in (accessed 14 March 2016).

lie, no birth risk factors and ready to give written consent were enrolled in this study. While women with hemoglobin < 8gms%, pregnancy induced hypertension, abruption placenta, marginal placenta previa, low lying placenta, multiple pregnancy, malpresentation, polyhydromnios, previous uterine fetal death, coagulation abnormalities and also epilepsy, cardiac, renal and hepatic disorder were excluded from the study. In our study 112 pregnant women were included. All the women were followed through first and second stage of labour. After vaginal delivery of the baby, umbilical cord is clamped and cut immediately. The resident avoided traction on the umbilical cord until there was evidence of placental separation. Immediately after delivery of the placenta, injection oxytocin 10IU given intramuscularly and the blood loss measured visually by placing the bedpan underneath the parturient women immediately after the delivery of the placenta. The collected blood was poured into a jar for volume measurement and all soaked gauze pads when counted and weighted.[5]

OBSERVATIONS AND RESULTS

Table 1: Age and Gravida of the participants

Age distribution of the patients [n=112]		Primigravida	Gravida 2	Gravida 3	Gravida 4	Gravida ≥5
20 -25 years	73	36	29	4	4	-
21 - 30 years	32	8	10	5	9	-
31 - 35 years	6	-	-	3	-	3
36 - 40 years	1	-	1	-	-	-
Total	**112**	**44**	**40**	**12**	**13**	**3**

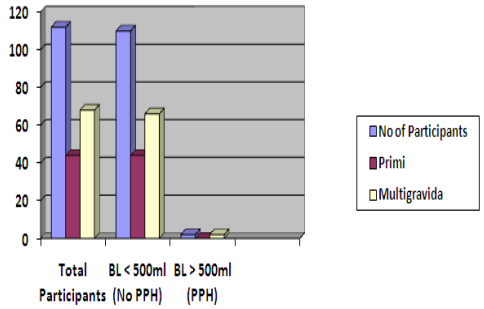

Figure 1: Shows number of participants with and without PPH

Among 112 cases, there was no PPH in 100 (98.2%) cases and PPH was observed in two patients (1.8%). (Chart 1) Blood loss: In patient I, 800 ml blood loss was measured, aged 24 and gravida two. In patient II, 600 ml blood loss was measured, aged 23 and gravida two. In our study PPH occurred in multigravida and average blood loss was about 700ml. In these two patients PPH was controlled by giving another 20IU of oxytocin intramuscularly. So PPH was very less when we used oxytocin 10 IU intramuscular during third stage of labour.

DISCUSSION

Oxytocin is important for cervical dilatation before birth and causes contractions of uterus during second and third stage of labour. This also serves to assist the uterus in clotting the placental attachment point in post-partum.[6] The practice of fundal massage immediately after delivery of the placenta and follow up palpation has not observed in most countries, suggesting insufficient surveillance of women during the hours, when most maternal death occurs worldwide.[7] The administration of oxytocin after expulsion of the placenta has the advantage of reducing the risk of over infusion of placental blood to the baby. There is also evidence to show the beneficial effects of delaying cord clamping and cord drainage. [8, 9] A study of Bamigboye *et al* compared rectal misoprostal with syntometrine for the management at third stage of labour, and found the same result.[10] Ng *et al* carried out a multicentic randomized control trial of oral misoprostol and intramuscular syntomentrine in the management of third stage of labour. There was no significant difference between the two groups, in the mean blood loss, incidence of PPH and fall in hemoglobin concentration. [11] McDonald and Abbott compared effects of oxytocin with oxytocin ergometrine in reducing the risk of PPH and found that ergometrine - oxytocin was associated with small reduction in the risk of PPH but more of nausea, vomiting and hypertension.[12] Oxytocin will not produce any nausea, vomiting and hypertension. Ergometrine can produce vasoconstriction, which lead to hypertension, vomiting and other complications. So oxytocin is better choice for prophylactic use in third

stage of labour to prevent PPH. Parson *et al* compared rectal misoprostal 800 µg versus oxytocin 10 IU intramuscular with the delivery of anterior shoulder. This result were compared in terms of change in hemoglobin concentration before and after delivery, need of additional oxytocin, estimated blood loss, blood transfusion, medication side effects. The results were compared in both the groups. The need of additional oxytocin and blood transfusion was highest with misoprostol as compared to oxytocin group. The late absorption of rectal misoprostal delays its effects in controlling hemorrhage during first hour of delivery leading to more need of oxytocin.[13] Here also it is proved that oxytocin is the best uterotonic drug used during third stage of labour. In our study we enrolled 112 antenatal cases, among them two cases had atonic PPH who were second gravida and average blood loss was 700ml and the age was 24 and 23 respectively. This hemorrhage was also controlled by giving additional 20 IU of oxytocin intramuscularly. This is proved that oxytocin is the best uterotonic drug used prophylactically during third stage of labour without any medicational side effects.

CONCLUSIONS

Oxytocin has the best uterotonic drug profile amongst the prophylactic drug used, strongly favors its routine use for active management of third stage of labour.

REFERENCES

1. Maughan KL, Heim SW, Galazka SS: Preventing postpartum hemorrhage managing the third stage of labour: Am Fam Physician. 2006; 73(6):1025-8.
2. Fentow JJ, Baumeister LM: Fogarty J. Active management of third stage of labour among American Indian women: Fam Med. 2005; 37(6):410-14.
3. Hofmeyr JG, Ferreira S, Nikodem VC, Mangesi L, Singata M, Jafta eta: Misoprostol for treating postpartum hemorrhage: a randomized controlled trial [ISRCTN 72263357]: BMC pregnancy child birth. 2004; 4:16.
4. Prendivilla WJP, Elboume D, McDonald SJ: Active versus expectant management in the third stage of labour: The Cochrane Library. 2007; Issue 4, Published by John Wiley and Sons, Ltd.
5. Vimala N, Mittal S, Kumar S, Dadhwal V, Mehta S: Sublingual misoprostal versus methylergometrine for active management of the third stage of labour: Int J Gynaecol obstet. 2004; 87(1): 1-5.
6. Takayanagi Y, Yoshida M, Bielsky IF, Ross HE, Kawamata M, Onaka T, etal: Pervasive social deficits but normal parturition in oxytocin receptor – deficient mice: Proceedings of the National Academy of Sciences of the United States of America. 2005; 102: (44) 16096-101.
7. NL Sloan, Durocher J, Aldrich T, Blum J, Winikoff B: What measured blood loss tells us about postpartum bleeding; a systematic review: BJOG. 2010; 117:788-800.
8. Cynthia Stanton, Deborah A, Rod knight, Iwan A, Sourou G, Ahebir G etal: Use of active management of the third stage of labour in seven developing countries: Bulletin of the world health organization. 2009;87:207-15
9. McDonald SJ, Middleton P: Effects of timing of umbilical cord clamping of term infants in maternal and neonatal outcome: Cochrane Database of systematic Review. 2008 ;(2): Art no: CD 004074; DOI; 10, 1002/ 14651858, CD 004074 Pub2.
10. Bamigboye AA, Merrell DA, Hofmeyral GJ, Mitchell R: Randomized comparison of Rectal misoprostol with Syntometrine for the management of third stage of labour: Acta Obstet Gynecol Scand. 1998; 77:178 - 81.
11. Ng PS, Chan AS, Sin WK, Tang LC, Cheung KB, Yuen PM: A multicenter randomized controlled trial of oral misoprostal and i.m. syntometrine in the management of third stage of labour: Hum Reprod. 2001; 16(1):31-35.
12. McDonald S, Abbott JM, Higgins SP: Prophylactic ergometrine – oxytocin versus oxytocin for the third stage of labour: Cochrane database of Systematic reviews. 2007; (1): Art. No.: CD000201. DOI: 10.1002/14651858.CD000201.pub2.
13. Parsons SM, Walley RL, Crane JM, Matthews K, Hutchens D: Rectal misoprostal versus oxytocin in the management of the third stage of labour: J obstet Gynaecol. 2007; 29(9):711-18.

Source of Support: None Declared
Conflict of Interest: None Declared