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Carbetocin Versus Oxytocin for Prevention of Postpartum Hemorrhage after Vaginal Delivery in Combind Military Hospital at Mymensingh

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Abstract: *Postpartum hemorrhage (PPH) is the one of the important cause of maternal mortality. All women who carry a pregnancy beyond 20 weeks' gestation are at risk for PPH and its sequelae. Although maternal mortality rates have declined greatly in the developed world, PPH remains a top cause of maternal mortality elsewhere.Many different drugs and medications are apply to prevent this PPH. Carbetocin and oxytocin used mostly for curation of PPH. In this study our main objective to find most crucial and effective drug of PPH prevention by comparing the effectiveness of Carbetocin versus oxytocin. During the study double-blinded randomized study was done where 100 pregnant women divided into two groups: Group 1 (50women) received single 100 μg Iv dose of carbetocin and Group 2 received of 10 IU oxytocin Iv. In both groups received their drug after fetal and before placental delivery. During the study Women in carbetocin group showed a statistically significant lower systolic and diastolic blood pressure immediately after delivery and 60 min than women in oxytocin group.Regarding amount of bleeding (337.73 ± 118.77ml versus 378 ± 143.2ml), occurrence of PPH (28%versus 60%), need for other uterotonics (32% versus 52%) and hemoglobin difference between before and after delivery (0.4gm/dl versus 0.3gm/dl) which indicate carbetocin is a better alternative to traditional oxytocin for PPH treatment. Further study is needed for better outcome.*

Keyword: *PPH , Carbetocin, Oxytocin, Double-blinded randomized study*

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I. Introduction

Postpartum bleeding or postpartum hemorrhage (PPH) is often defined as the loss of more than 500 ml or 1,000 ml of blood within the first 24 hours following childbirth .Some have added the requirement that there also be signs or symptoms of low blood volume .Signs and symptoms may initially include: an increased heart rate, feeling faint upon standing, and an increased breath rate.As more blood is lost the women may feel cold, their blood pressure may drop, and they may become restless or unconscious. The condition can occur up to six weeks following delivery .The most frequent cause of PPH is uterine atony, therefore,active management of the third stage of labor, particularly the prophylactic use of uterotonic agent can significantly decrease the incidence of hemorrhage compared with expectant management.

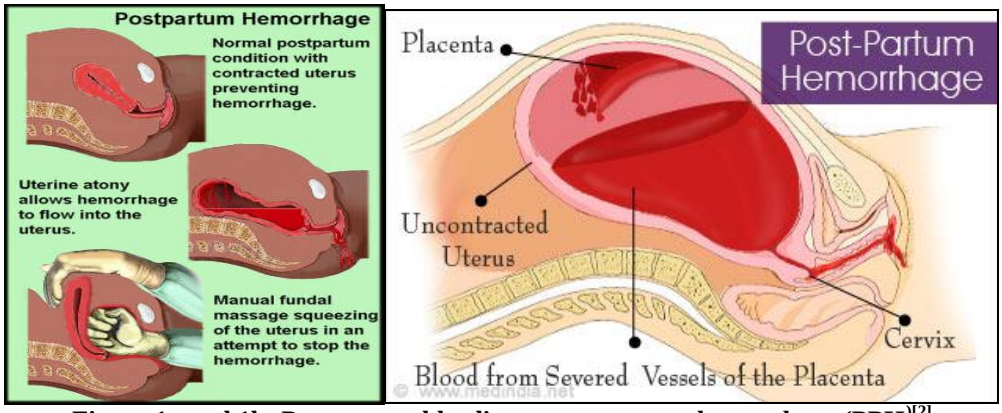

Figure 1a and 1b: Postpartum bleeding or postpartum hemorrhage (PPH)[2]

Retained placenta or placental bits, a tear of the uterus, or poor blood clotting are other possible causes. It also occurs more commonly in those who already have a low amount of haemoglobin, with bigger or more than one baby, obese or older than 40 years of age. It also occurs more commonly following caesarean sections, also those in whom medications are used to start labor, those requiring the use of a vacuum or forceps, and those who have an episiotomy. Uterotonics are the first line treatment for PPH when its cause is the uterus not contracting well. Carbetocin is an oxytocin agonist. Oxytocin agonists are a group of drugs that mimic the oxytocin action, and being the natural hormone that helps to reduce blood loss at birth.[1] Intravenous oxytocin is also the drug of choice for postpartum hemorrhage. But Carbetocin helps the uterus to contract quickly and the contractions to last for longer than Oxytocin.

Figure 2 a and 2b :Carbetocin and oxytocin[3]

In this study our optimum goal is to identify ultimate management of PPH by comparing effectiveness of carbetocin versus oxytocin

II. Objective

General Objective:

- Evaluate the efficiency rate of carbetocin and oxytocin for prevention of PPH.

Specific Objective:

- To identify suitable prevention method of PPH.

III. Methodology

Study Type:

- This study was double-blinded randomized study.

Study Place and Study period:

- The study was done in Combined Military Hospital-Momensahi, Mymenshing for 1 year May 2017 to May 2018.

Method:

- This study was performed on 100 pregnant women randomized into two groups: Group 1 (50women) received single 100 µg Iv dose of carbetocin and Group 2 received of 10 IU oxytocin Iv. Both groups received their drug after fetal and before placental delivery.

Demographic and other baseline data for the two study groups are presented as n (%) unless stated otherwise.

IV. Result

Table1: Demographic and other baseline data for the two study groups

Variable	Carbitocene (n-50)	Oxytocin(n-50)
Age (years)	18-40	18-42
Primiparous	14(28%)	18(36%)
Multiparous	36(72%)	32(64%)
PreviousPPH	08(16%)	06(12%)
Prolonglabour	12(24%)	16(32%)
Brith weight(gm)	3391+200	3460+200

	Carbetocin(n-50)	Oxytocin(n-50)
Additional oxytocin given	16	26
a.Oxytocin infusion	02	07
b.ProstaglandinE_1	12	16
c.Methergin	02	03
PPH	14	30
a.		
b. 500ml-1000ml	11	19
b. >1000ml	03	11
Blood transfusion	04	02
At 0min BP-Systolic(mm of Hg)	100	120
Diastolic(mm of Hg)	60	70
At 60minBP-Systolic(mm of Hg)	120	120
Diastolic(mm of Hg)	70	80
Before delivery Hb(gm/dl)	10.4	10.1
After24hours delivery Hb(gm/dl)	10	9.8
Secondary PPH	00(00%)	00(00%)
Pulse(beat/min)	95-110	70-100
Uterine tone on day1 (median range)	9(5-10)	9(7-10)
Other complications such as nausea,vomiting, itching etc	00(00%)	00(00%)

Outcome data for the two study groups n-(%) unless stated otherwise.

There was a statistically significant difference between the two study groups regarding amount of bleeding(>500-1000ml)22%versus38%,>1000ml 6%versus22%.In oxytocin group PPH is more. Occurrence of PPH 14(28%) versus 30(60%) need for other uterotonics .Here occurrence in oxytocin group is significantly more than carbitocin group and hemoglobin difference between before delivery (10.4mg/dl versus 10.1mg/dl)after delivery(10.0gm/dl versus 9.8gm/dl).All being lower in carbetocin group and measured hemoglobin 24 h after deliverybeing higher in carbetocin group; however, there was no significant difference between the two study groups regarding occurrence of major PPH and the need for blood transfusion (8% versus4%). Women in carbetocin group showed a statistically significant lower systolic and diastolic blood pressure immediately after delivery and at 60 min than women in oxytocin group. There was no significant difference between the two study groups regarding, uterine tone on day 1 occurrence of nausea, vomiting, flushing, dizziness, headache, shivering, metallic taste, dyspnea, palpitation and itching. Women in carbetocin group experienced tachycardia more than women in oxytocin group.

V. Discussion

Our results have shown that carbetocin is superior to oxytocinin prevention of PPH after vaginal delivery in women with atonic PPH. This fact can be explained by the known longer half-life of Carbetocin when compared to Oxytocin causing a more uterine response, in terms of frequency and amplitude of uterin contractions.In our study, we found that the amount of bleeding after delivery was significantly lower in women who received carbetocin than those who received oxytocin. We also found less need for additional uterotonics and less difference between hemoglobin before and after delivery among women in the carbetocin group. Many other study performed where have randomized 377 women undergoin gcesarean sections to receive either IV carbetocin 100 mg or IVoxytocin 5 IU after the delivery of the baby.[5] The carbetocin group needed significantly less uterotonic results, which agrees with our findings.Also many other findings has been shown that Carbetocin has been associated with a similar low incidence of adverse effects to oxytocin.[6][7]

VI. Recommendation

Further studies should be conducted to determine the safety and efficacy profile of carbetocin in and to analyze the cost-effectiveness and minimum effective dose of carbetocin.

VII. Conclusion

After many studies and several findings we can conclude that carbetocin is a better alternative to traditional oxytocin in prevention of PPH after vaginal delivery in women.

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