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To Compare the Frequency of PPH in Patients Given Tranexamic Acid Versus Control Group in Third Stage of Labour

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ABSTRACT

Obstetrical haemorrhage is the leading cause of maternal mortality, most commonly occurring in post partum period. Each year worldwide 530,000 die from causes related to pregnancy and childbirth. Post partum haemorrhage is a common and occasionally life threatening complication of labour and is mostly due to uterine atony, which is a failure of uterus to properly contract after the child is born. Consequently, bleeding from the blood vessels in the uterus is not controlled. **Objectives:** To compare the frequency of post partum haemorrhage in patients given tranexamic acid with active management of third stage of labour versus the control group given active management of third stage of labour alone. **Methodology:** A randomized controlled trial study carried out in the Department of Obstetrics & Gynaecology Unit-II, Sir Ganga Ram Hospital, Lahore. Total 420 patients were selected, 120 cases who received active management of third stage of labour with 1 gram injection of tranexamic acid and 120 controls who received active management alone. **Results:** Patients were divided in two groups with 210 patients in each group. As compared to active management of third stage of labour alone addition of tranexamic acid was associated with a significant reduction in frequency of post partum haemorrhage (PPH) and amount of blood loss. Frequency of PPH was 7.1% in control group and 2.4% in tranexamic acid group. **Conclusion**: It is concluded that adding tranexmic acid to the active management of third stage of labour is an efficient and safe method of reducing post partum haemorrhage.

Key words: Postpartum Haemorrhage, Tranexamic Acid, Labour Pain.

INTRODUCTION

Obstetrical haemorrhage is the leading cause of maternal mortality, most commonly occurring in post partum period. Each year worldwide 530,000 die from causes related to pregnancy and childbirth.[1,2,3] Post partum haemorrhage is a common and occasionally life threatening complication of labour.[4] It is commonly defined as blood loss of <500 ml after vaginal delivery of a baby or >1000ml after lower segment caesarean section. Fourteen million women who have PPH each year, about 2% die, with an average interval from onset of bleeding to death of 2 to 4 hours due to problems in third stage of labour & 1% require blood transfusions increasing to 5% after instrumental and caesarean delivery.[1] Prevalence of post partum haemorrhage in Pakistan is 25%.[5]

During delivery when the placenta separates from the uterine wall a sequence of physiological and haemostatic changes occur that reduce bleeding: strong myometrial contractions, increased platelet activity, a massive release of fibrinolytic coagulation factors & a parallel increase in fibrinolytic activity. As a result there is theoretical rationale for the use of anti agents in the management of post partum haemorrhage. Obstetrical, surgical, and radiological interventions play central role in the management of obstetrical haemorrhage. Tranexamic acid is commonly used in

gynaecology but bleeding associated with pregnancy has also been treated. Tranexamic acid seems to be effective in the prevention and management of bleeding during pregnancy.[7] It is significantly reduces the estimated blood loss in experimental group. The frequency of PPH *i.e.* blood loss >500 ml was lower in the experimental group i.e. 1.8% as compared to control group *i.e.* 6.8% respectively.[8]

Post partum haemorrhage is the leading cause of maternal mortality in developing countries like Pakistan. In routine practice we use active management of third stage of labour and no recommendations for tranexamic acid use in PPH exist in Pakistan so to emphasize this problem. It can be an effective management of post partum haemorrhage in areas where surgical facilities are not available or sparce.

MATERIAL AND METHODS

This is a randomized controlled trial study carried out in the Department of Obstetrics & Gynaecology Unit-II, Sir Ganga Ram Hospital, Lahore within a period of six months from 15-09-13 to 15-03-14. Total 420 patients were included in the study. They were further divided in two groups (210 patients in each group). Group A received 1 gram injection tranexamic acid intravenously along with active management of third stage of labour and Group B received active management of third stage of labour alone. Patients who have gestational age between 37 and 42 irrespective of parity, live fetus, cephalic presentation and vaginal birth were included. Those patients who have placental abruption (uterine bleeding following premature separation of a normally situated placenta), ultrasound evidence of placenta previa (placenta is partly or completely inserted in lower uterine segment), caesarean scar or any other uterine scar, induced labour (It is the planned initiation of labour prior to its spontaneous onset and chorioamnionitis It is the infection of fetal membranes due to bacterial infection ascending in uterus from vagina assessed by clinical symptoms were excluded. Women fulfilling the inclusion criteria were taken in this study. Informed consent was taken from the patients. Cases received an intravenous injection of 1gm Tranexamic acid with active management of third stage of labour, while controls group received active management of third stage of labour alone. On admission history, examination and investigation were carried out. Blood loss after delivery was estimated by counting number of soaked pads and blood collected in kidney tray. Socio-demographic data collected. Active management of third stage of labour was done. Placenta was delivered by controlled cord traction. The data was entered in SPSS 20 and analyzed. Frequency and percentage of PPH among cases and control were calculated. Mean and standard deviation calculated for age, parity gestational age and blood loss. Association of postpartum haemorrhage with age and parity was also noted.

RESULTS

Mean age was 27.77±3.87 years for control group and 28.27±3.70 for cases. Mean gestational age in control group was 38.78±1.08 and in cases it was 38.77±1.03. There was reduction in blood loss in group A i.e. cases. Mean blood loss in cases was 395.53±55.57 ml with minimum value 285ml and maximum 645ml as compared to control group in which mean blood loss was 415.5±80.32ml with minimum and maximum values of 280ml and 800ml respectively. Five patients experienced blood loss more than 500ml in group A *i.e.* cases while 15 patients in the control group experienced blood loss more than 500ml (Table 1).

Table 1: Descriptive statistics.

Statistics	Control Mean ± SD	Cases Mean ± SD
Age (18-38)	27.77±3.87	28.27±3.70
Parity (1-7)	2.52±1.29	2.56±1.27
Blood Loss	415.5±80.32	395.53±55.57
Gestational age	38.78±1.08	38.77±1.03

The frequency of PPH was 15 (7.1%) in control group and 5 (2.4%) in cases respectively (Table 2). While taking into account frequency distribution of age and blood loss in cases 1 patient (0.4%) who had PPH was in age group 21-25 years,

one patient (0.4%) in age group 26-30 years and 3 patients (1.4%) was in age group 31-35 years which is statistically significant. In control group 3 (1.4%) patients with PPH were in age group 21-25 years, 5 patients (2.3%) were in age group 26-30 years and 7 patients(3.3%) were in age group 31-35 years (Table 3).

Table 2: Post partum haemorrhage cross tabulation.

Groups	Postpartum Haemorrhage	
	Yes	No
Control	195 (92.9%)	15 (7.1%)
Cases	205 (97.6%)	5 (2.4%)

Table 3: Frequency distribution of age and blood loss according to groups.

Age (Years)	Control		Cases	
	Blood loss <500 not PPH	Blood loss >500 PPH	Blood loss <500 not PPH	Blood loss >500 PPH
15-20	1	0	1	0
21-25	41	3	32	1
26-30	89	5	97	1
31-35	53	7	66	3
36-40	11	0	10	0

Table 4: Frequency distribution of parity and blood loss according to groups.

Parity	Control		Cases	
	Blood loss <500 not PPH	Blood loss >500 PPH	Blood loss <500 not PPH	Blood loss >500 PPH
1-3	161	13	164	3
3-5	25	2	35	2
5-7	9	0	6	0

Comparing the frequency distribution of parity and blood loss in different age groups in cases and control group, 3 (1.4%) patients were in group of parity 1-3 and 2 (0.9%) patients were in group 3-5 in cases while 13 (6.1%) patients in age group 1-3 and 2 (0.9%) patients were in group 3-5 respectively. There was no relation found between PPH and increasing parity (Table 4). Considering frequency distribution of blood loss and gestational age in groups, in cases 4 patients (1.9%) had gestational age between 35 and 40 weeks, one patient (0.4%) had between 40 and 45 weeks, while in control group 9 patients (4.2%) had gestational age between 35 and 40 weeks and 6 patients (2.8%) had between 40 and 45 weeks respectively.

DISCUSSION

During delivery when the placenta separates from the uterine wall a series of physiological and haemostatic changes occur that reduce bleeding: strong myometrial contractions, increased platelet activity, a massive release of coagulation factors and a parallel increase in fibrinolytic activity. As a result there is a theoretical rationale for the use of antifibrinolytic agents in the management of post partum haemorrhage.

Administration of Tranexamic aid intravenously in the third stage of labour may be one of these methods. Tranexamic acid a synthetic derivative of amino acid Lysin is an antifibrinolytic that reversibly inhibits the activation of plasminogen thus inhibiting fibrinolysis and reducing bleeding.[3] In our study mean blood loss in cases was 395 ml and 415ml in control group. There was a difference of 20 ml on average. Rezan et al conducted a systematic review of five randomized controlled trials in which mean blood loss difference was 32ml in cases and control. These clinical studies suggest that tranexamic acid reduces the amount of blood loss after delivery during caesarean section and vaginal deliveries, and reduces the requirement of blood transfusion.[3]

The frequency of PPH in our study was 2.4% in tranexamic acid group as compared to control group having frequency 7.1%. This is comparable with the study conducted by Gungorduk et al in which the frequency of PPH i.e. blood loss >500ml was less 1.8% in experimental group and 6.8% in the control group.[3] In another study conducted by Yang et al frequency of PPH was lower 6.4% in the tranexamic acid as compared to in control group. Average blood loss was also significant in the tranexamic acid. This showed that tranexamic acid is efficient and safe in reducing post partum haemorrhage.[9] In the study of Movafegh et al mean blood loss was significantly lower in the tranexamic acid group as compared to control group (262.5±39.6 vs 404±94ml).[10] In our study there was

no association between increasing age, parity an gestational age with increased blood loss. In the study of Ferrer et al[11] the administration of tranexamic acid was associated with a reduction in post partum blood loss of 92ml.

Post partum haemorrhage is the leading cause of maternal mortality in developing countries like Pakistan. In routine practice we use active management of third stage of labour and no recommendations for tranexamic acid use in PPH exist in Pakistan so to emphasize this problem by adding tranexamic acid with active management of third stage of labour can be an effective management of post partum haemorrhage in areas where surgical facilities are not available or sparse.

CONCLUSION

It is concluded that adding tranexmic acid to the active management of third stage of labour is an efficient and safe method of reducing post partum haemorrhage. Tranexamic acid, which is an antifibrinolytic that is used widely to prevent and treat haemorrhage, merits evaluation. Postpartum haemorrhage is still the leading cause of maternal mortality especially in developing countries like Pakistan so adding tranexamic acid to the management of PPH may be an effective tool to achieve this goal.

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