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ORIGINAL ARTICLE

Role of tranexamic acid in the prevention of primary postpartum haemorrhage.

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ABSTRACT… Objectives: To determine the role of TRANEXAMIC ACID in prevention of primary postpartum haemorrhage in women. **Study Design:** Observational Retrospective Cohort Design. **Settings:** DHQ Hospital, Gujranwala. **Period:** April 2016 to July 2018. **Material & Methods:** The data of 110 women who suffered postpartum haemorrhage was retrieved from the hospital records. Exclusion criteria included all the females who were below and equal to 18 years of age. Patients suffering from acute respiratory distress syndrome (ARDS), on long-term anti-inflammatory and steroid therapy were also excluded. Whereas all the women who had experienced postpartum haemorrhage after birth were included. **Results:** We retrieved data of 110 women who had experienced postpartum haemorrhage after birth. The age of participants was averaged 28.95 + 7.6 years. The group I was named as early treatment group and contained 35 women whereas the group II (late treatment or without TRANEXAMIC ACID) had 75 women. The mean age of women is higher in the group I i.e. 30.2 +6.8 than 27.7+8.4. The TRANEXAMIC ACID was given intravenously with an average dose of 1 gram (0.1-3.0 grams) 1.5 hours after the birth. This was an average time for all cases in group I. The average time was 4.6 hours in group II. **Conclusion:** We concluded that use of intravenous TRANEXAMIC ACID in postpartum haemorrhage is associated with reduced haemorrhage but a low dose at early treatment may not yield good results.

Key words: Maternal Morbidity, Maternal Mortality, Post-Partum Haemorrhage, TRANEXAMIC ACID.

INTRODUCTION

Throughout the world, the obstetric haemorrhage in pregnancy, delivery and puerperium is a crucial health issue/ problem. In developing countries where the resources are less, it is still one major factor leading to maternal mortality. The situation in developed countries where the resources are enough or rich, it accounts more than 50% of the acute post-partum morbidity cases.[1]

The administration of haemostatic agents may support coagulation and correctness of coagulopathy is a major component in the management of blood loss.[2] The TRANEXAMIC ACID interacts with plasminogen and blocks the interaction of plasmin with fibrin thus preventing dissolution of fibrin clot.[3] Among both elective and emergency surgeries the TRANEXAMIC ACID has shown reduced blood loss and as a result the decreased need of blood transfusion.[4]

TRANEXAMIC ACID has been extensively studied in trauma patients. It has been observed that 1 gram injection of TRANEXAMIC ACID results in 15% reduction of mortality in severely bleeding trauma patients.[5] CRASH-2 and WOMAN trials suggest that treatment with TRANEXAMIC ACID must be administered as early as possible in order to gain maximum benefit.[6,7] The rationale of the study was to determine the role of TRANEXAMIC ACID in prevention of primary postpartum haemorrhage because it has not been evaluated extensively in local literature though it is being administered routinely.

MATERIAL & METHODS

This observational retrospective cohort design present study was conducted at DHQ Ghujranwala from July 2017 till April 2018.

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The A total of 110 women who experienced postpartum haemorrhage were retrieved from the hospital records. The exclusion criteria included all the females who were below and equal to 18 years of age. Similarly, patients on long term anti-inflammatory drugs and steroids were also excluded. All patients who had experienced postpartum haemorrhage after birth were included in this study. Two groups were made in terms of treatment. Group A received early treatment and Group B did not receive TRANEXAMIC ACID. The treatment strategy or the therapy was TRANEXAMIC ACID. The data retrieved from the hospital records, including demographic information, diagnostic history, surgical techniques, age, gestational age, height, parity, weight in pregnancy, ethnicity, mode of delivery, cause of haemorrhage, shock, fluids and blood products used, abnormal placentation, intervention required and frequent blood loss measurement till control of bleeding. Due to the retrospective study design, informed consent was not required and no ethical issue was faced. Whole data was recorded in computer and analysed by version 20 of SPSS. Mean and standard deviation for quantitative data was calculated. Frequency distribution of percentages and frequencies was calculated for qualitative variables. P value found less than .05 was taken as significant.

RESULTS

We retrieved data of 110 women that had experienced postpartum haemorrhage after birth for this study. The age of all participants was 28.95 + 7.6 years. The group I was named as early treatment group and contained only women. Whereas the group II (late treatment without tranexamic acid) had 75 women. The mean age of women is higher in the group I i.e. 30.2 +6.8 than 27.7+8.4. The Average BMI of both groups was 23.7. More on the baseline characteristics are given in Table-I.

35 women got received tranexamic acid early in total and 71.4% women of these received tranexamic acid once early whereas 28.6% had been given at two occasions. The injection was administered to the patients intravenously with an average dose of 1 gram (0.1-3.0 grams).

Characteristics	Group I (Early Treatment)	Group II (Later Treatment)
N	35	75
Age	30.2 +6.8	27.7+8.4
BMI	24.6	22.8
Nulliparity (Median)	135	508
Gestational age (Av. Weeks)	39	40
Mode of delivery		
Vaginal	24 (68.57%)	58(77.3%)
Caesarean section	11(31.43%)	17(22.7%)
Primary cause of bleeding		
Uterine atony	25(71.4%)	
Retained placenta	5(14.3%)	
Other	5(14.3%)	
Placentation		
Abnormal localisation placenta	5(14.3%)	10 (13.3%)
Pathological ingrowth placenta	3(8.5%)	8(10.6%)
Treatment characteristics at first line therapy		
Recombinant Factor VII a-previously (Median)	0	0
Fibrinogen-previously (Median)	2	1
Estimated blood loss previously, ml (average)	1300	750
Bleeding rate, ml/min (average)	23	18
Shock any time before first line therapy (Median)	10	14

Table-I. A detailed summary of baseline characteristic for women.

The administration of tranexamic acid was applied just 1.5 hours after the birth. This was an average time for all the cases, whereas at average time of 4.6 hours, the treatment was provided in the other group. Women who were not administered tranexamic acid were also analysed in combination with the patients who had received late treatment.

The median composite morbidity mortality was 13(37.1%) in group I and 25(33.3%) in group II. About 2050 ml blood volume was lost after first line management in early group whereas 2100 ml blood lost in late group. The median total RBC units were 4 for each group, total of FFP, platelets, and blood products in group I was 2, 1, and 5 respectively whereas the median total numbers were 2, 1 and 5 in group II.

DISCUSSION

We have observed in our study that early administration of tranexamic acid throughout ongoing course of postpartum haemorrhage is neither linked with low maternal morbidity nor associated with decreased haemorrhage. Although our sample size is small, a significant association can be made with large sample size. We also did not observe any particular women group i.e., II or I with continuously ongoing postpartum haemorrhage that had got any beneficial effect of early administration of tranexamic acid. Majorly the confounding factors by indication may also be a reason for protective effect of tranexamic acid in our population. It was also likely that only major cases of haemorrhage have received early administration of tranexamic acid and minor cases of haemorrhage had received it late. However, the timing of first line management of bleeding was similar in both the groups.

Our study also provides the clinical endpoint information along with the blood loss volume. The inclusion criteria of women in our study were that all the women included who required transfusion of minimum 4 pints of blood or any additional blood product in the management of continuous postpartum haemorrhage. This may help in generalizability of the results that may assist in women examination in case of severe postpartum haemorrhage. In literature some studies have focused on use of tranexamic acid in prevention rather than management of postpartum haemorrhage, rather than treatment of postpartum haemorrhage.[2] The findings of our study are corroborated with the study finding in literature. A reduced blood loss was reported in a systematic review of RCTs through the prophylactic use of tranexamic acid for postpartum haemorrhage.[8] Many related studies were more focused on the maternal outcomes with the effect of tranexamic acid in the treatment of postpartum haemorrhage. Among of them was a trial on women that resulted in less maternal death due to bleeding and this was due to the administration of tranexamic acid with one to three hours after the birth, but no effect was reported in maternal morbidity.[9] Some of the studies with high dose of tranexamic acid i.e., 4 grams in one hour against a group without the treatment or a placebo group with postpartum haemorrhage, has shown the reduced blood loss in tranexamic acid group than placebo but even the difference was very less margined.[10]

Other related studies in literature could not establish difference in volume of blood loss, duration of bleeding or need for transfusion.[11] Our study findings were materializing plausible given the underlying mechanisms and causes of postpartum haemorrhage.[12] The block to fibrin clot degradation is due to the administration of tranexamic acid resulting in a decrease in blood loss. However, the primary cause in all obstetric origin cases of bleeding is postpartum haemorrhage. Therefore, while treating postpartum haemorrhage, we should focus in obstetric cause at first while solving the problem. The limitation of our study was that it's a retrospective study and sample size was small.

CONCLUSION

We may conclude from our study that early administration of tranexamic acid in postpartum haemorrhage is associated with reduction of blood loss but a low dosage at early treatment or late treatment may not yield the desirable results.

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