MISOPROSTOL AS A DRUG IN PROPHYLAXIS AND MANAGEMENT OF POSTPARTUM HAEMORRHAGE

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Abstract

Background: PPH is a single largest and leading cause of maternal mortality & severe morbidity in developing countries. A drug is needed which should be effective, cheap, safe, does not need refrigeration and that can be easily administered by untrained person. Misoprostol is the drug that fulfills these requirements. So this study is designed to evaluate the efficacy of Misoprostol in prophylaxis & management of PPH. **Materials and methods:** This observational study was carried out in the department of Obstetrics and Gynecology of Bangabandhu Memorial Hospital, Chattogram, during the period January to June, 2013. Total 168 pregnant women who were at term and expected to have a vaginal delivery were taken for this study. **Results:** The median length of the 3rd stage of labour was 8.8 minutes. 11 women (6.54%) required a manual removal of the placenta and 23 patients (13.69%) needed further therapeutic oxytocin to control bleeding. In 145 cases (86.30%) additional oxytocic was not required, about 93.45% cases placenta was expelled out easily by active management of 3rd stage. There was a drop in Hb and haematocrit concentration after delivery, which was statistically significant. An upward trend was (>0.11˚F) noticed regarding temperature after delivery. **Conclusion:** Misoprostol is effective for prevention and management of postpartum haemorrhage, & can consider as a good alternative to other conventional oxytocic drugs.

Key words

Postpartum haemorrage(PPH); Misoprostol, Oxytocin, Ergometrine, Syntometrine, Haematocrit.

Introduction

The third stage of labour is a period when both the patient and the obstetrician may be relieved with the safe arrival of a healthy baby and hence be lured into a false sense of security that all is safe and well. Complications may occur unexpectedly at this stage and unless prompt action is taken to control the situation, serious maternal morbidity and sometimes mortality may occur.

The third stage is perhaps the most dangerous part of labour for the mother, the main risk being PPH[1]. More than half of all maternal death occurs within 24hr of delivery, most commonly from excessive blood loss.PPH is the leading cause of maternal death in the developing countries accounting for 14.9% and less than 10% in advanced countries[2]. Importance of prevention, particularly where there is limited access to emergency medical facilities. There is now good evidence that prophylaxis oxytocic drug in the third stage of labour is effective in preventing haemorrhage. Drugs used for prophylaxis against PPH include Oxytocin, Ergometrine and Syntometrine. Randomized trials and there meta-analysis confirm that these agents can reduce the incidence of PPH by about 60% to 70% when given parentally following delivery of the baby[3,4]. The WHO has recommended the use of I/M prophylactic administration of oxytocin in third stage of labour, is now routinely used in many countries as well in Bangladesh[5]. Ergometrine has also been used but is associated with side effects also contraindicated in hypertension, cardiac disease, Rh (-) ve mother and preeclamsia[6]. Potential problem with the use of ergomertine & oxytocin in developing countries especially in rural areas include the need of protection

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from light and for refrigeration because oxytocic agents are not stable at high ambient temperatures, they require special storage condition. Studies designed to stimulate the storage condition commonly found in tropical countries that a variety of brands of ergometrine lost 21% to 27% of their potency after one month, and over 90% after one year of storage exposed to light and 21^0C to 25^0C.

It must be given by intramuscular injection requiring a sterile needle and syringe, an important consideration in the era of hepatitis and HIV infection. Someone is needed to inject the drugs to the patient; such trained personnel are not always available particularly in rural areas. Indeed the majority of the delivery (Nearly 74%) in our country takes place at home and trained personnel do not attend many of them and lack of access to skilled birth attendants who are able to administer parental oxytocin, the high incidence of anaemia in pregnancy, non availability of safe blood transfusion services and lack of refrigeration to store oxytocics worsen the outcome of PPH in our country.

Misoprostol, a prostaglandin E1 analogue is a potent uterotonic agent and is therefore acquiring clinical application in the induction of abortion, cervical priming and induction of labour with or without pre treatment with mifepristone (RU-486)[7]. Misoprostol can be given by several routes such as –oral, vaginal, sublingual, and rectal. Absorption of Misoprostol is extremely rapid, being detected in circulation within 2 minutes of its oral ingestion[8]. Its effects on the postpartum uterus has been shown to be rapid[9]. It does not require special storage conditions and has a shelf life of several years[10]. Its safety has been established in studies over the past 10 years for the prevention and management of peptic ulcer[11]. Several recent studies have examined the use of Misoprostol in the third stage of labour.

Based on this suggestion this prospective observational study was done to evaluate the effectiveness of Misoprostol for the prevention and management of PPH and to find out its side effect.

Materials and methods

Eligible women were informed about the study after admission in hospital and written consent was taken before including in the study. A detailed history was taken and all the patients were examined to find out exclusion criteria for proper selection of the patients. The study population was divided into two groups. Misoprostol was given in group 1, and Active management of third stage of labour was given in group 2.

In group 1, immediately after birth of the baby and clamping of the cord, 600mcg of Misoprostol was given per rectally by the obstetrician conducting the particular labour.

For treatment of PPH another two tablets (400mcg) misoprostol was given per rectally by the Obstetrician conducting the particular labour & the amount of bleeding (i.e. PPH) was estimated clinically by visual estimation. The delivery of the placenta was managed by controlled cord traction. In our study, a haematocrit change of 10% from admission to postpartum day one or the need for red cell transfusion after delivery was adopted as a definition of PPH.

Blood sample for the determination of Hb% and haematocrit concentration was obtained from women before delivery and 12 hours after delivery. A record was kept of the last measured blood pressure and temperature before birth and 1 hour after delivery. Potential adverse effects of Misoprostol such as shivering, nausea, vomiting, diarrhoea, fever were also evaluated. We also recorded the length of third stage of labour, the rate of manual removal of placenta, need for blood transfusion, and use of additional oxytocic to control bleeding. All data were recorded on a pre-designed data collecting sheet.

Results

92.85% cases placenta were expelled out spontaneously in group-1 and 94.04% cases in group-2. Only 7.14% cases manual removal of placenta was done under G/A in group-1, and 5.95% cases in group-2.It is statistically significant (p=0.0059) [Table I].

3rd stage was effectively managed in group-1(85.71%) &group-2(83.33%). But in 14.28% of cases bleeding were more than average in group-1 and 16.66% in group-2. The value is statistically significant (p=-0.01) [Table II].

92.30% cases PPH was managed by tab. Misoprostol 1000µgm per rectally. In those cases where 600 µgm Misoprostol was given for prophylaxis purpose, in that case only 400 µgm Misoprostol was given for management of PPH. Only 7.69%cases required additional Ergometrine to manage PPH [Table III].

Pre delivery mean Hb level 12.07 ±0.97 g/dl and 12 hours after delivery mean Hb level was dropped by 0.3.

it was statistically significant (p=0.045) [Table IV].

Pre and post delivery difference is 1.02. Effect is statistically significant (p=0.047) [Table V].

This table shows that pre delivery mean value of temperature was 98.05°F. After delivery mean value of temperature were increased up to 0.11°F, It is statistically significant (<0.05) [Table VI].

Table I : Mode of placental delivery (n = 168)

Mode of placental delivery	Number of patient		Percentage		p value
	Group-1	Group-2	Group-1	Group-2	
Spontaneous	78	79	92.85%	94.04%	.0059
Manual removal	6	5	7.14%	5.95%	

Table II : Incidence of PPH (n=168)

PPH	Number of patient		Percentage		p value
	Group-1	Group-2	Group-1	Group-2	
Not occurred	72	70	85.71 %	83.33%	-0.01
Occured	12	14	14.28%	16.66%	

Table III : Management of PPH (n=26)

DRUGS	Number of patient	Percentage
MISOPROSTOL	24	92.30%
Other Oxytocic	2	7.69%

Table IV : Effects on Hb level (n=168)

Time of record	Mean±SD	p Value
Pre delivery	12.07±0.97	
Post delivery	11.77±1.120.045	0.045

Table V : Effects on haematocrit level (n=168)

Time of record	Mean±SD	p Value
Pre delivery	34.06±1.06	
Post delivery	33.04±1.3	0.047

Table VI : Effects on temperature (n=168)

Time of record	Mean±SD	p Value
Pre delivery	98.05±0.45	
Post delivery	98.16±0.37	<0.05

Discussion

The main outcomes in this study were the efficacy and safety of use of Misoprostol in the prevention & management of PPH. During the study period 168 women were enrolled. Their characteristics are summarized in different tables.

In this present study, the duration of the 3rd stage of labour was 8.8 minutes. 11 women (6.54%) required a manual removal of the placenta and 23 patients (13.69%) needed further therapeutic oxytocin to control bleeding. No women required blood transfusion. There were no cases of infection and no patient required surgical evacuation of the uterus.

The drop in Hb% and haematocrit concentration was the primary outcome measures The American College of Obstetrician and Gynecologists' suggests that the definition of PPH may be based on change in laboratory findings in the post partum period. Result from the present series found a standard deviation in the drop in Hb concentration of 0.3g/dl which is comparable with other study, carried out by Refaey and Walley[12,13]. There was a trend to decrease haematocrit concentration in postpartum, the main difference between pre and 12 hours postpartum was 1.02 that was comparable with other study shown in table[14].

In the present study, there was a slight decrease in systolic BP, although the difference was significant but it was within the normal range. But no effect on diastolic BP. Because our observational study was preliminary one. We excluded women with pre eclampsia but it may be that Misoprostol can be used safely in this woman .Several study already proved that Misoprostol does that increase the blood pressure[15].

A trend towards elevated temperature postpartum was noted. Mean rise of temperature was more than 0.10 F and statistically significant. Earlier investigations have also reported pyrexia with Misoprostol for first trimester abortion and in the third stage management[16]. Shivering was not known to be a side effect of Misoprostol prior to its use it for the 3rd stage of labour.

From our recent study, it can be stated that Misoprostol is effective in the prevention & management of PPH. The results of this study suggest but not conclusively that Misoprostol may reduce the risk of PPH. It does not increase the blood pressure, has few side effects and is well tolerated. Further studies also needed to assess the use of Misoprostol in women at risk of postpartum haemorrhage and in rural setting of developing countries.

Limitation

It was a single center study. The incidence of PPH is such that a very large study would be required to evaluate as the primary outcome.

Conclusion

From our study it can be stated that Misoprostol is a safe, well-tolerated, effective form of medical therapy for the prevention and management of PPH. So Misoprostol may be an alternative to conventional standard oxytocic drugs for the prevention & management of PPH in low risk women.

Recommendation

Such study would need multi-centered trial and may require undue time for completion. Excessive blood loss may be difficult to define clinically, especially if it is based on subjective observations. Blood loss based on clinical assessment is often underestimated. Large scale multicenter with nationally representative sample find more accurate result to have a conclusion.

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Contribution of authors

YAB - Conception, design, acquisition data, drafting and final approval.
NK - Data analysis, critical revision and final approval.
SH - Drafting, acquisition data and final approval.
MKB - Critical revision, interpretation of data and final approval.

Discloser

All the authors declared no competing interest.

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