ORIGINAL ARTICLE

Effectiveness of Misoprostol in the Prevention of Postpartum Hemorrhage

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ABSTRACT

Aim: To determine the effectiveness of misoprostol through rectal route in the prevention of primary postpartum hemorrhage and determine its therapeutic effect.

Methods: This Randomized Controlled Trial was carried out in the Labour Wards Nishtar Hospital Multan from January 2013 to June 2013. Two hundred women selected as per inclusion and exclusion criteria coming to labour ward with the ascertainment of period of gestation through ultrasonography. Two groups were formed by using random number tables. In the case of group A, 800 µg of Misoprostol P/R was given in addition to oxytocic drugs used routinely while group B was control group.

Results: Out of 200 patients, 82% in group-1 and 93% in group had spontaneous labour while 18% in group-A and 7% in group-B had induced labour. Episiotomy was performed in 22% patients in group-A and 33% patients in group-B. As regards blood loss, in PPH patients 22% in group-A and 18% in group B had blood loss > 500 ml. Out of 100 patients, 93% in group-A and out of 100 patients, 95% in group-B had therapeutic effect of misoprostol. The mean age of the patients was 26.62 ± 0.47 vs. 25.25 ± 0.41 years respectively in group-A and group-B. In group-A 71% and in group-B 75% patients had vaginal delivery.

Conclusion: Misoprostol administration using rectal route, though not statistically significant, is effective as there were fewer side effects.

Keywrds:- Postpartum haemorrhage (PPH), Misoprostol,

INTRODUCTION

The third stage of labour is potentially the most hazardous part of labour having grave implications for the mother. The main risk is that of postpartum haemorrhage (PPH), which is the most common form of major obstetric hemorrhage. The World Health Organization (WHO) estimated that 529,000 women died from obstetric causes in 2000[1]. Fourteen million cases of PPH occur each year with a case-fatality rate of 1%. It accounts for one quarter of all maternal deaths worldwide[2]. In developing countries, PPH is most common cause of maternal mortality and accounts for over one-third of all maternal deaths[3]. Most of these deaths occur in the resource-poor countries of Africa and Asia, particularly in rural areas and are avoidable[4].

The postpartum hemorrhage is defined as blood loss of more than 500 ml following vaginal delivery and more than 1000 ml in case of caesarean section[5]. This quantity is extremely difficult to identify outside a controlled trial setting. Even trained physicians are reported to typically underestimate blood loss by about half[6]. While there are many known risk factors[7], PPH occurrence is random,making it impossible to predict in both low and high risk populations. Furthermore, blood loss can be rapid. In developing countries, where nearly half the women deliver without the aid of a skilled birth attendant there is simply not enough time to seek treatment for PPH. The only way to help women without access to trained attendants is through preventive measures[8].

To manage PPH effectively a number of medical and surgical interventions are required to control the bleeding[9]. Recently considerable attention has been paid to the choice of uterotonic agent particularly comparing the cheap and orally administered prostaglandin misoprostol with other uterotonics[10]. The findings seem to indicate that the rectal misoprostol is a viable (Safe, inexpensive, thermostable and effective) alternative[11] to parenteral oxytocin in areas where storage and parenteral administration of drugs are problems[12]; as oxytocin has to be stored at 40 ◦C to retain its efficacy. Whereas tablets of misoprostol kept dry retain their efficacy even at tropical temperatures for several years or more. Oxytocin (10. i.u) given parenterally is an effective uterotonic agent reaching peak levels within minutes of administration, requires skills and sterile equipment for safe administration. It may be inactivated if exposed to high ambient temperature

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and needs storage at 40◦C. It causes water retention, vasodilatation and hypotension when given in high doses.

Misoprostol is a methyl ester, a synthetic prostaglandin E1 analogue registered for the prevention and treatment of gastric ulcers, is well known for its off-label use as a uterotonic agent. There is credible scientific evidence that misoprostol is useful in the active management of third stage of labour[13]. It reaches peak in 30 minutes but detectable in blood plasma immediately. It can be given orally, sublingually[14] or rectally, appears to be as effective as 10. i..u parenteral oxytocin in minimizing blood loss during third stage of labour as determined by change in Hb concentration[15]. Side effects of misoprostol include nausea, vomiting, fever, diarrhea and shivering[16]. Commonest regimes for treatment of PPH are 1000µg rectally[17]. Rectal route is free of gastrointestinal side effects and also reduces the risk of transmitting hepatitis C, AIDS and other blood borne diseases[18]. Through this route the uptake is slow but for prolonged duration. Rectal route also has side effects like shivering and pyrexia but are dose dependent[19]. Misoprostol is safe inexpensive, thermostable and effective uterotonic and can replace parenteral oxytocin for low risk women in rural and remote areas of underdeveloped countries. Where parenteral oxytocin may be unavaible[20]. As more than 50% of births occurs at home in Asia mosoprostol is suitable for preventing PPH at home births[21] because it is given orally or rectally, not heart or high sensitive, inexpensive, rapidly acting and side effect, are predictable and self limiting.

MATERIAL AND METHOD

This Randomized Controlled Trial was carried out in the Labour Wards Nishtar Hospital Multan from January 2013 to June 2013. Two hundred women selected as per inclusion and exclusion criteria coming to labour ward with the ascertainment of period of gestation through ultrasonography. Two groups were formed by using random number tables. In the case of group A, 800 µg of Misoprostol P/R was given in addition to oxytocic drugs used routinely while group B was control group.

RESULTS

Present study was conducted on 200 patients with primary PPH. Out of 200 patients, 82% in group-1 and 93% in group had spontaneous labour while 18% in group-A and 7% in group-B had induced labour. Episiotomy was performed in 22% patients in group-A and 33% patients in group-B. As regards blood loss, in PPH patients 22% in group-A and 18% in group had blood loss > 500 ml. Out of 100 patients, 93% in group-A and out of 100 patients, 95% in group-B had therapeutic effect of misoprostol. The mean age of the patients was 26.62 ± 0.47 vs. 25.25± 0.41 years respectively in group-A and group-B (Table 1). In group-A 71% and in group-B 75% patients had vaginal delivery as shown in table 2. Side effect of therapy in patients of PPH are shown in table-3.

Table 1: Descriptive Statistics

Variables	Group A	Group B
Age (years)	26.6±0.47	25.25±0.41
Parity	25.25±0.41	2.10±0.12
Height (cm)	160.52±0.52	160.18±0.48
Weight (kg)	69.07±.18	63.39± 0.72

Table-2: Mode of Delivery

Mode	Group A	Group B
Vaginal	71 (71%)	75 (75%)
Instrumental	03 (03%)	01 (01%)
CS	26 (26%)	24 (24%)

Table 3: Side Effects of Therapy

Side effect	Group A	Group B
Nausea	1 (1%)	5 (5%)
Vomiting	1 (1%)	9 (9%)
Diarrohea	2 (2%)	1 (1%)
Fever	6 (6%)	-
Fluid retention	-	2 (2%)
Hypertension	-	7 (%)
Shivering	6 (6%)	2 (2%)

DISCUSSION

Postpartum hemorrhage is the most common cause of maternal morbidity and mortality world wide[22]. Majority of these deaths (88%) occur with first four hours of delivery due to events in the third stage of labour. There are 600,000 maternal deaths reported world wide every year and 99% of these occur in developing countries[5].

Misoprosotol, a new and inexpensive prostaglandin E1 analogue, has been suggested as an alternative for routine management of the third stage of labour[23]. The advantages of misoprostolover other uterotonic agents are that it does not require parentral administration and is associated with serious side effects. It is used in the third stage of labour primarily to prevent maternal death[24].

Present study was conducted to determine the effectiveness and therapeutic effect of misoprostol through rectal route in the prevention of primary PPH. Mean age of cases was 26.62±0.47 years and that of controls 25.25±0.41 years. Mean parity was 3.07±0.18 vs 2.10+0.12 in group-A and B respectively. Almost similar results have been reported in other local and international studies. In a

study mean age of the patients was 26.49+5.50 vs 25.60 + 5.60 years in two groups respectively, 50% vs 40% patients wee para 1-4 in misoprostol and oxytocin group respectively[25].

Operative and instrumental delivery increases the risk for PPH. In our study 71% vs 75% patients delivered vaginally in cases and controls respectively, 3% vs 1% instrumental deliveries and 26% vs 24% cesarean deliveries. In a study, 28.8% were delivered by spontaneous vaginal delivery, 33% by instrumental delivery while 38.1% wee delivered by cesarean section[111]. In another study showed that 90% vs 89% patients had vaginal deliveries and 10.1% vs 11% patients had cesarean deliveries in their patients[26].

In present study blood loss was evident in 18%vs 22% cases and controls respectively. While therapeutic effect of rectal misoprostol was 95% vs 93% compared to oxytocin. Fever and shivering was more frequent (6% each) in group-A while vomiting and hypotension was frequent in group-B (4% each). Our study results are in accordance with local and international literature.

Aliya et al used misoprostol 800 microgram per rectally just before the start of cesarean section for the prophylaxis of postpartum hemorrhage, 8% patients had PPH[27]. Misoprostol administered per rectally had equal efficacy to ergomatrine given intravenously for the prophylaxis of postpartum hemorrhage but the side effect profile and patient tolerability was better with misoprostol.

CONCLUSION

This study concluded that misoprostol administered using rectal route, though not statistically significant, is effective as there were fewer side effects with 95% efficacy rate and 18% blood loss.

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