A STUDY OF THE ETIOLOGY AND MANAGEMENT OF POST PARTUM HAEMORRHAGE, AT NISHTAR MEDICAL COLLEGE AND HOSPITAL, MULTAN

Sadaf Rafique, Tahmina Azhar*, Zahoor Ahmed**

Easleigh (United Kingdom), *Army Medical College Rawalpindi, **Nishtar Medical College and Hospital Multan

ABSTRACT

Objectives: The main objectives of present study were to determine the incidence and to identify the various etiological factors of primary post portum hemorrhage (PPH) at Nishter Hospital Multan. We also aimed to review various management options for better outcome and to compare the results with international literature.

Study Design: Descriptive study

Place and Duration of Study: The study was conducted at the department of obstetric and gynaecology, Nishtar Medical College from October 2000 to September 2001.

Patients and Methods: The Study included all the cases presented with the primary admitted at Nishtar Hospital Multan either delivered at Nishtar hospital Multan or outside. All the patients who suffered from PPH were thoroughly interviewed and examined according to the study protocol.

Results: A total of 3000 cases admitted in Nishtar Hospital Multan during the study period. Out of these 2100 (70%) were vaginal deliveries and 900 deliveries were caesarean section out of these 117 (3.9%) patients developed PPH. Among the etiological factors most common were; uterine atony 48%, and retained placenta 34%. Most successful management strategy was early use of uterotonic agents (68%).

Conclusion: Despite good antenatal care, better health services, early detection of problem, availability of new pharmacological agents and introduction of different surgical options, PPH is still, a major complication of third stage of labour responsible for a high maternal morbidity and mortality.

Keywords: PPH, Risk factors, Uterine atony, retained placenta

INTRODUCTION

Excessive blood loss after child birth is a major cause of morbidity and mortality in both the industrialized [1] and developing countries [2, 3]. Post partum haemorrhage (PPH) is the commonest complication of third stage of labour [4]. Primary postpartum hemorrhage is one of the top five causes of maternal mortality in both developed and developing countries [5]. Around 5–8% of obstetric patients suffer serious post partum blood loss, specially in rural communities, where the incidence of anaemia in pregnancy, lack of safe blood transfusion services and lack of refrigeration to store oxytocin, and inability of birth attendants to administer parenteral oxytocics, worsen the outcome of PPH. The World Health Organization (WHO) defines "Primary Post Partum Haemorrhage as bleeding in excess of 500 ml in the first 24 hours following delivery" [6]. The use of this definition presents a practical problem as it is well known that visual estimation of post partum blood loss is notoriously inaccurate [7]. Studies using radio-labeled red cells, [8] acid-haematin extraction, [7] and meticulous collection and measurement of shed blood [9] have shown that clinical estimate of blood loss underestimates the incidence of haemorrhage by 30 – 50%. The average volume of blood loss following vaginal delivery can be approximately 500 ml suggesting that the use of this minimum cut off level for PPH is invalid. For this reason, PPH is now defined as a blood loss of more than 1000 ml [10]. Others have defined PPH as "Bleeding resulting in a significant fall in

Correspondence: Dr Sadaf Rafique, 21 Field View, Chandlers Ford, Easleigh, SO53 4JL, United Kingdom
Email: sadafnajam@hotmail.com
Received: 04 Feb 2009; Accepted: 21 May 2009

haematocrit following delivery or the need for blood transfusion." [11].

Maternal mortality from PPH is a much greater problem in the developing countries. PPH is estimated to account for approximately 28% of pregnancy related deaths worldwide [12]. The difference in absolute mortality rates from PPH between non industrialized and industrialized countries underscore the effectiveness of medical care in the reduction of mortality from this cause and the need to improve the problem in an environment with limited medical facilities.

The objectives of this study were:

1. To determine the incidence of and different etiological factors of primary PPH.
2. To evaluate the effectiveness of different management strategies.

PATIENTS AND METHODS

This descriptive study was conducted at the department of Obstetrics & Gynaecology, Nishtar Hospital Multan, one of the largest teaching hospitals in Southern Punjab. Patients admitted to Nishtar Hospital Multan who delivered at the hospital or at home were included in this study. Case notes of all such patients were reviewed between October 2000 –September 2001, to identify the patients who suffered from PPH.

Demographic details including age, parity and previous obstetrical history were collected. Duration of labour, any complications, degree of blood loss, mode and place of delivery and morbidity and mortality were recorded. The estimation of blood loss was made by the number of sanitary pads used and amount of apparent blood loss and clots. Ultrasound scan was carried out for further assessment. The need for blood transfusion and maternal morbidity and mortality were the markers for successful outcome for various management modalities. In particular, data was collected about various treatment options used in the management and whether they were successful or not. Statistical analysis was carried out by Chi square and Fischer exact test with a p value of <0.5 taken as significant.

RESULTS

During the one year study period, 3000 patients, delivered either at Nishtar Hospital Multan or outside, were registered. Out of these, 2100 (70%) patients were delivered vaginally and 900 (30%) had a caesarean section, either elective or emergency. One hundred and seventeen patients in total developed PPH. Hence the incidence of post partum haemorrhage at Nishtar Hospital Multan during this study period was 3.9%.

These 117 patients were further analyzed to specify different etiological factors. These 117 patients were further analyzed to specify different etiological factors. Demographic description and obstetric history was given in table 1. PPH was common among the age group 20 – 30 years. A higher incidence (44%) of PPH was seen in grand multipara.

Majority of patients who suffered from PPH were those who had no record of any antenatal care (49%) or just very infrequent visits by traditional birth attendants (32%). Only 19% booked patients developed PPH. Incidence of PPH was higher in patients having operative deliveries (67%) as compared to those with spontaneous vaginal delivery (33%).

Prolonged labour was a contributory factor in 76% of patients who developed PPH 11% patients underwent precipitate labour, however there were 13% who delivered within the normal duration, yet developed PPH. 56 (48%) patients had a moderate post partum bleed, 46 (39%) experienced mild bleeding and the other 15 (13%) had severe bleeding (Table 1). Description of predisposing factors is given in table 2.

The commonest cause of PPH was uterine atony, seen in 57 (49%) patients. The second commonest cause was retained placenta in 40 (34%) cases. Birth canal trauma was responsible for 20 (17%) cases (3 bled from episiotomy, 13 from cervical lacerations

and there were 4 cases of uterine rupture) (Figure 1).

Most of the cases 60 (51%) received more than one treatment options. In 80 (26%) patients I/V syntometrine was given, majority responded quickly but in some patients adjuvant treatment was required. Thirty (25%) cases received either intramuscular or intra-myometrial injection of PGF2 alpha. Twenty (17%) patients received intra-umbilical injection and 20 (17%) patients were helped with per-rectal misoprostol pessary. In 24 (20%) patients manual removal of placenta was carried out under general anaesthesia. 5 (4%) patients required uterine packing for atonic uterus. Repair of birth canal after exploration was carried out in 16 (14%) cases with evident trauma. Uterine repair was performed in 2 (25) cases out of 4 cases of ruptured uterus. Correction of inversion was attempted in 3 (3%) cases, one of which failed and required hysterectomy. B-Lynch Brace suture was applied in 2 (2%) cases with good results. Uterine devascularization was carried out in 6 (5%) cases, in all bilateral internal iliac arteries were ligated. In one case ovarian vessels were also clamped. Caesarean hysterectomy was performed in 10 (9%) cases as a last resort, in which 4 cases were placenta praevia, 2 ruptured uterus and 4 atonic uterus (Table-3).

Anaemia was the commonest morbidity (27%) due to haemorrhage leading to delayed recovery, puerperal sepsis (13%) and wound infection (9%). Hypovolemic shock was the sequel of severe bleeding in 49 (42%) cases with later development of renal failure in 4 (3%) and Sheehan's syndrome in 1 (1%) case. Urinary tract infection was observed in 6 (5%) patients (Figure 2). There ware 4 (3.4%) deaths in this series. Two patients were delivered at home and admitted in a very serious condition after delayed referral. One patient died due to DIC after massive hemorrhage and one died 10 days after delivery due to acute renal failure.

DISCUSSION

PPH is a tragic complication of third stage of labour and is still a major cause of maternal morbidity and mortality in developing countries. WHO estimates that

Table-1: Demagraphic & obstetrical description (n=117)

Median Age	23 (range 17-45 Years)
Parity	
Primipara	40 (34%)
Medium (2-4)	26 (22%)
Grand multipara ≥ 5	51 (44%)
Duration of Labor	
< 4 hours	13 (11%)
8 – 12 hours	15 (13%)
13 – 20 hours	89 (76%)
Blood Loss	
Mild (500 – 1000 ml)	46 (39%)
Moderate (1100 – 1500 ml)	56 (48%)
Severe (>1500 ml)	15 (13%)
Mode of delivery	
Home	77 (66%)
Hospital	40 (34%)
Mortality	4 (3.4%)
Home	3
Hospital	1

Table-2: Predisposing Factors (n=117)

	Factors	No. of patients
1.	Grand multipara	51 (44%)
2.	Prolonged labour	89 (76%)
3.	Induction of labour	10 (9%)
4.	Previous third stage labour complications	5 (4%)
5.	Pre-eclampsia	7 (6%)
6.	Abruptio placentae	13 (11%)
7.	Multiple pregnancy	10 (9%)

Table-3: Management modalities for PPH (N=117)

	Management	No. of patients
1.	I/V Syntometrine	80 (68%)
2.	Use of PGF_2 alpha	30 (26%)
3.	Per-rectal misoprostol	20 (17%)
4.	Intra-umbilical injection	20 (17%)
5.	Manual removal of placenta	24 (20%)
6.	Uterine packing	5 (4%)
7.	Repair of birth canal	16 (14%)
8.	Repair of uterus	2 (2%)
9.	Correction of inversion	3 (3%)
10.	B-Lynch Brace suture	2 (2%)
11.	Uterine revascularization	6 (5%)
12.	Caesarean hysterectomy	10 (9%)
13.	Blood transfusion	57 (49%)

approximately 500,000 women die each year

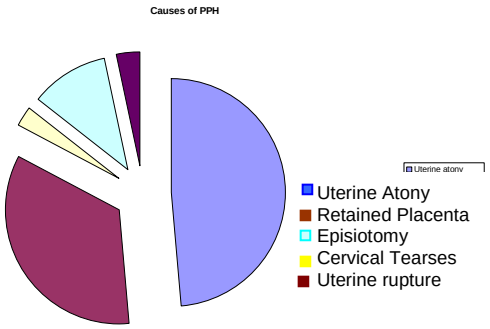

Fig. 1: Causes of PPH

Pakistan (3%) [16] UK (4 – 11%) [17], and New Zealand (4%) [18]. Interestingly, in this study more patients had bleeding of more than 1000 ml as compared to those who bled between 500-1000 ml 61% vs. 39%. This is a reverse situation as compared to majority of the Western studies and most probably due to ignorance of people who brought the patient to the hospital very late when the initial resources of body had been consumed leading to DIC disseminated intravascular coagulation.

Prolonged labour, grand multiparity,

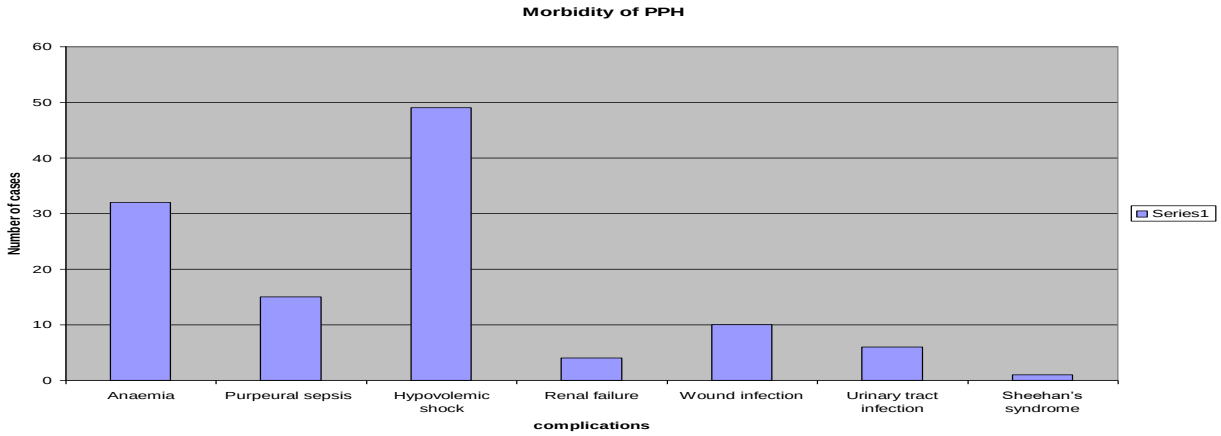

Fig. 2: Morbidity of PPH

from pregnancy-related causes and at least 98% of these deaths occur in developing countries [13]. PPH is estimated to account for approximately 28% of pregnancy-related deaths across the world12 in contrast with 40% deaths in the developing countries [14]. This discrepancy is because of certain factors. Most of the women in developing countries like Pakistan live in rural areas, having no antenatal care during pregnancy, multiple child births and deliveries are conducted at home by untrained birth attendants [15]. During perperium no importance is given to improve the mother's general health. The complications of pregnancy like anaemia, hypertension, and multiple pregnancies remain undetected and the patient is brought to the hospital very late and usually in a morbid condition.

The incidence of PPH in this study was 3.9%. Similar results have been reported from

abruption placenta, multiple pregnancies, pre-eclampsia and previous third stage complications were the main predisposing factors for PPH in this study. Combs et al used multivariate analysis and identified similar factors responsible for PPH in their study [19]. Another population based case control study from Zimbabwe has shown similar results [20].

Uterine atony was found to be the commonest cause of primary PPH in a European study [21]. A British survey in 1993 reported the genital tract injuries including uterine rupture, cervical lacerations, vulvo-vaginal injury and episiotomy as common and spontaneous rupture of uterine or ovarian vessels as rare causes for PPH.[22]. Almost two thirds of the patients developing PPH were in the age group of 20-30 years in this study. This compares well with a

Nigerian study where 71% women who suffered from PPH were in age group of 15 – 25 years [18].

Intravenous Syntometrine was given to the majority of patients with excellent results. A review of randomized trials from Ireland (1999 – 2000) showed a significant reduction in the risk of post partum blood loss with the use of Syntometrine 23]. Oxytocin stimulates the upper segment of myometrium to contract rhythmically and this constricts the spiral arteries and decreases uterine flow [24]. Similarly, prostaglandins enhance uterine contractility and result in vasoconstriction [25]. A systemic review showed moderately decreased blood loss and shorter third stage of labour with prostaglandins when compared with other uterotonics [26]. PGF-2 alpha is the commonly used prostaglandin but should be used with caution in patients with asthma or hypertension. Misoprostol is an alternative agent used in the management of PPH, however its side effects may limit its use [27]. Active management of third stage gave very good results in this study, particularly in those patients having significant risk factors, including use of Syntometrine, as discussed already and use of an injection of saline 100 ml and syntocinon 5U into umbilical vein to prevent the retention of placenta by facilitating the placental separation. A similar study was conducted in England in 1999, 12 trials were done which showed a significant reduction in placental removal after use of saline plus oxytocin [28].

Uterine devascularisation can be a life saving maneuver in the setting of severe PPH. Uterine artery ligation is a simple and effective procedure as these vessels supply around 90% of the uterine blood flow [29]. Ligation of the internal iliac arteries reduces bleeding from the genital tract by decreasing the pulse pressure in the pelvic arterial circulation. However, this is technically more difficult and carries risk of damage to nearby structures like the ureter, internal iliac vein and external iliac artery. Uterine devascularization can be a promising surgical option to preserve maternal fertility. In a review by Aflau et al, internal iliac arteries were ligated in 6 patients, and all of them survived and hysterectomy was avoided [30].

There was a higher frequency of emergency hysterectomy in patients with atonic uterus 40% of total hysterctomies (9%) in our study. Another study carried in India showed 78.04% hysterectomies 31. An American study showed an incidence of 20% in such cases [32]. Forty percent emergency hysterectomies were done for placenta previa in this study comparable to 65% cases in a study by Zelop et al [33]. The risk of emergency hysterectomy after uterine rupture was high in this study (20%). In western countries this incidence of hysterectomies after uterine rupture is fairly low (0.2-1.5%) Blanchette et al have reported their results in patients with trial of scar where the incidence of uterine rupture was 4% [34].

This study is not without limitations. The retrospective nature and reliance on case notes and documentation can question the accuracy of the data. The various methods used to manage PPH have not been evaluated by means of a randomized trial. There is clearly a need for trials to assess the effectiveness of various treatment options to allow an evidence based approach to this dangerous obstetric complication.

CONCLUSION

Despite good antenatal care, better health services, early detection of problem, availability of new pharmacological agents and introduction of different surgical options, PPH remains a major third stage complication adding to morbidity and mortality of the procedure.

In this study the incidence of PPH (3.9%) was comparable with the published international literature. But maternal mortality was quite high (3.4%), due to various factors discussed above. From the management point of view the best results were obtained with use of combination of more than one medical option and active management of third stage of labour.

RECOMMENDATIONS

On the basis of this study the following recommendations are made to avoid the tragic complication of PPH.

1. Adopt good antenatal care, training of traditional birth attendants, promotion of health programme and provision of latest knowledge at local facilities.
2. Introduction of reproduction health care by improving anaemia, reduction in family size, good hygiene and nutrition.
3. Identification and early admission of high risk patients for further management
4. Active management of third stage of labour reduces the risk of PPH
5. Oxytocin is the first choice agent for prevention of PPH
6. Misoprostol may be used as an alternative but has higher side effects.

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