

FREQUENCY, CAUSES AND OUTCOME OF POST PARTUM HAEMORRHAGE AT LIAQAT MEMORIAL HOSPITAL KOHAT, PAKISTAN

Fouzia Gul¹, Musarrat Jabeen², Heema³

ABSTRACT

OBJECTIVE: To determine the frequency, causes and outcome of postpartum haemorrhage (PPH) at Liaquat Memorial Hospital (LMH) Khyber Medical University Institute of Medical Sciences (KIMS), Kohat, Pakistan.

METHODS: This descriptive study was conducted on diagnosed patients of PPH admitted in labour room of LMH, KIMS, Kohat, Pakistan. Data regarding mode of delivery, management and outcome of PPH was collected from January 2011 to December 2015. The blood loss measurement was subjective. The standard criterion for PPH definition and classification was used. The data was analysed via SPSS-21.

RESULTS: Out of 46266 deliveries during the study period, documented PPH cases were 1453 (3.14%). The most common cause of PPH was atonic uterus (n=566; 38.95%), followed by genital tract trauma (n=489; 33.7%). Primary PPH was seen in 1408 (96.9%) cases. Out of 1453 cases of PPH, 993 (68.34%) had caesarean section, 330 (22.71 %) were delivered vaginally and 130 (8.95%) had abdominal delivery for ruptured uterus. Conservative medical management was done in 535 (36.82%) patients; repair of various kinds of tears was done in 489 (33.65%) patients and subtotal abdominal hysterectomy in 198 (13.63%) cases. Nine (0.62%) patients had disseminated intravascular coagulation (DIC), 7 (0.48%) patients had ruptured bladder along with ruptured uterus, 5 (0.34%) patients had renal failure and 3 (0.21%) patients developed pulmonary edema. Thirty five (2.41 %) patients died due to PPH.

CONCLUSION: In all the observed patients of PPH, atonic uterus and genital tract trauma were the main causes while DIC and ruptured uterus were main complications of PPH.

KEY WORDS: Postpartum Haemorrhage (MeSH), Uterine Inertia (MeSH), Atonic uterus (Non-MeSH), Uterine Rupture (MeSH), Disseminated Intravascular Coagulation (MeSH), Maternal Mortality (MeSH), Subtotal abdominal hysterectomy (Non-MeSH).

THIS ARTICLE MAY BE CITED AS: Gul F, Jabeen M, Heema. Frequency, causes and outcome of post partum haemorrhage at Liaquat Memorial Hospital Kohat, Pakistan. *Khyber Med Univ J* 2018;10(2):90-94.

INTRODUCTION

Postpartum haemorrhage (PPH) is the major cause of maternal deaths in low-income countries and is responsible for about one-quarter of global maternal deaths.¹ PPH is causing 140,000 deaths each year which means one woman is dying in every four minutes due to PPH.² According to Pakistan demographic & health survey (PDHS 2006-07), PPH is contributing

for 27.2% maternal deaths in Pakistan.³

Uterine atony, retained placenta and genital lacerations are the most common causes of PPH.⁴ Hypovolumic shock, disseminated intravascular coagulation (DIC), hepatic dysfunction, acute respiratory distress syndrome and renal failure are the serious complications of massive PPH.⁵⁻⁷ Among PPH survivors, an estimated 12% will suffer from the consequences of severe anemia.⁸ PPH,

¹ Professor, Department of Obstetrics and Gynecology, Liaquat Memorial Hospital (LMH), Khyber Medical University Institute of Medical Sciences (KIMS), Kohat, Pakistan

E mail: fgmeena@gmail.com

² Professor & Head, Department of Obstetrics and Gynecology LMH, KIMS, Kohat, Pakistan

³ Assistant Professor, Department of Obstetrics and Gynecology, LMH, KIMS, Kohat, Pakistan

Date Submitted: March 04, 2017

Date Revised: March 13, 2018

Date Accepted: April 08, 2018

an opportunity killer can occur unpredictably and no patient is immune from it. The rapid onset and progression of PPH means that high-quality services are required if we have to prevent PPH-related mortality and morbidity.⁹

Although various studies have been done on causes, morbidity and mortality of PPH in Pakistan,^{5,6,10-12} however, the magnitude of PPH & its associated complications in southern districts of Khyber Pakhtunkhwa (KP), Pakistan was not highlighted. Liaquat Memorial Hospital (LMH) Kohat is providing obstetric services to southern districts of KP and adjacent Federally Administered Tribal Areas (FATA). This study was carried out to determine the frequency, causes and outcome of PPH, over the period of last five years in LMH, Kohat, Pakistan.

METHODS

This retrospective study was conducted on the diagnosed patient of PPH, who were admitted in Liaquat Memorial (Women & Children) Hospital, Khyber Medical University Institute of Medical Sciences (KIMS), Kohat, Pakistan from January 2011 to December 2015. All women received with PPH or develop PPH in hospital after deliveries were included in the study. Patients on anticoagulants were excluded from study. Information was collected through a structured questionnaire with questions on bio-data, place of delivery, mode of delivery, possible causes of PPH, medical and surgical interventions. All the data was entered in SPSS 21 and also analysed through it.

TABLE I: MODE OF DELIVERY IN PATIENTS WITH POSTPARTUM HAEMORRHAGE

| Mode of Delivery | Frequency (n= 1453) | % age |
|--|---------------------|-------|
| Caesarean Section | 993 | 68.34 |
| Normal Vaginal Delivery | 273 | 18.79 |
| Abdominal Delivery (in cases of ruptured uterus) | 130 | 8.95 |
| Instrumental Delivery | 53 | 3.65 |
| Assisted Breech Delivery | 04 | 0.27 |

Out of total deliveries, documented evidence of PPH was found in 1453 deliveries. The measurement of blood loss was subjective and on hemodynamic instability of patient.

Ethical approval of the study was taken from ethical review board of KIMS, Kohat, Pakistan.

Operational definitions:

Primary PPH was considered as “the loss of 500 ml or more of blood from the genital tract within 24 hours of the birth of a baby”.¹³ Secondary PPH was defined as “abnormal or excessive bleeding from the birth canal between 24 hours and 12 weeks postnatally”.¹⁴

RESULTS

Out of total 46266 deliveries from January 2011 to December 2015, 40,329 (87.17%) were vaginal deliveries, 5807 (12.55%) were caesarean deliveries and 130 (0.28%) patients had abdominal deliveries (in cases with ruptured uterus).

The documented cases of PPH in 46266 deliveries were 1453 (3.14%). Out of 1453 patients, 409 (28.1%) patients were having parity of 2-4, 693 (47.7%) were between para 5-8, 283 (19.5%) were primipara and 68 (4.7%) were of parity 9 or above.

Out of 1453 patients with PPH, 1316 (90.57%) had in-hospital delivery while only 137 (9.43%) patients were delivered at home. There were total 35 (2.41%) maternal deaths with 18 (51.43%) due to atonic uterus, 9 (25.72%) due to DIC and 8 (22.85%) due to ruptured uterus.

The commonest mode of delivery associated with PPH was caesarean section (n=993; 68.34%) [Table I]. The most common cause of PPH was atonic uterus (n=566; 38.95%) followed by genital tract trauma (n=489; 33.7%), and uterine rupture (n=247; 17.01%) [Table II]. Secondary PPH was observed in 45 (3.1%) cases.

While managing PPH, conservative medical management was done in 535 (36.82%) patients, repair of various types of tears was done in 489 (33.65%) patients and subtotal abdominal hysterectomy (STAH) in 198 cases (13.63%) cases (Table III). Out of 198 cases of STAH, 102 (51.5%) were operated for rupture uterus and 96 (48.5%) cases for atonic uterus.

Apart from these procedures, eighty (5.6%) patients had additional conservative surgical procedures in the form of B-Lynch suture, bilateral uterine artery ligation & bilateral internal iliac arteries ligation. Out of 247 (16.99%)

cases of ruptured uterus, 145 (58.70%) patients had a repair and 102 (41.30%) cases ended up in STAH.

Out of 1453 PPH patients, 24 (1.65%) patients developed serious complications. Nine (0.62%) patients went into DIC, 5 (0.344%) patients had renal failure, 3 (0.21%) patient developed pulmonary edema and 7 (0.48%) patients had ruptured bladder along with ruptured uterus. Patients with renal failure & pulmonary edema were referred to intensive care units (ICU) of tertiary care hospital for further management.

DISCUSSION

In our study, PPH was reported in 3.14% of cases from January 2011 to December 2015. Majority (90.57%) developed PPH during hospital delivery. Primary PPH was seen in 96.9% cases. The commonest mode of delivery associated with PPH was C/Section (68.34%) & the most common cause of PPH was atonic uterus (38.95%). About half of the patients with PPH had parity of 5-8. Majority of patients (63.18%) were managed with various surgical procedures and 36.82% had conservative medical management.

The global prevalence of PPH was estimated 10.8% and 2.8% of severe PPH in one systematic review. This systematic review identifying regional variations in the prevalence of PPH showed low prevalence of severe PPH in Asia (1.9%) as compared to Africa (5.1%).¹⁵ In another multi-country survey the reported rate of PPH was 1.2%.¹⁶ The frequency of PPH in our study was 3.14% while it was 1.7% in a

TABLE II: CAUSES OF POSTPARTUM HAEMORRHAGE

| Causes of Postpartum Haemorrhage | Frequency (n= 1453) | %age |
|--|---------------------|-------|
| Atonic Uterus | 566 | 38.95 |
| Genital Tract Trauma (vaginal, cervical tears, extended caesarean section tears) | 489 | 33.66 |
| Ruptured Uterus | 247 | 17.01 |
| Retained Placenta | 75 | 5.16 |
| Retained Conception Product | 45 | 3.09 |
| Haematoma (vaginal/broad ligament) | 31 | 2.13 |

TABLE III: MANAGEMENT OF POST PARTUM HAEMORRHAGE

| Management of Post-Partum Haemorrhage | Frequency (n= 1453) | %age |
|---------------------------------------|---------------------|-------|
| Conservative Medical Management | 535 | 36.82 |
| Repair of Various Types of Tears | 489 | 33.65 |
| Subtotal Abdominal Hysterectomy | 198 | 13.63 |
| Conservative Surgical Management | 80 | 5.5 |
| Manual Removal of Retained Placenta | 75 | 5.16 |
| Evacuation of Uterus | 45 | 3.1 |
| Haematoma Drainage | 31 | 2.13 |

study conducted at Liaquat National Hospital Karachi¹² & 18.60% in a study done at Lahore.¹⁰ Systematic reviews have shown that wide variation in the global and regional prevalence of PPH and severe PPH are mainly due to methodological diversity in the measurement and prevalence-estimation of PPH.^{15,17}

Atonic uterus has been reported as one of the major cause of PPH. The frequency of atonic uterus in our study was 38.95%. It was reported 53.3% in a study at Bolan Medical College Hospital Quetta¹⁸ & 28.9% in a study conducted at Jinnah Postgraduate Medical Centre Karachi.¹⁹ In developed countries, the increased incidence of PPH was shown to be associated with increase in the incidence of uterine atony.²⁰

After uterine atony, genital tract trauma (33.65%) was the second leading cause of PPH in our study. The frequency of genital tract trauma as causes of PPH was 23.3% in study at Quetta¹⁸ and 23.7% in a study done in Haryana district of India.²¹ Among genital tract trauma, cervical injuries represent frequent morbidities associated with vaginal deliveries.⁴ The frequency of instrumental delivery contributing to PPH in our study was 3.65%, majority due to forceps delivery. Forceps and vacuum deliveries are considered as significant risk factors for maternal soft tissue injury and cervical lacerations.²² In our study, vaginal & broad ligament haematoma were responsible for 31 (2.13%) cases of PPH. This is in accordance with other international & local studies.^{5,23}

The third common cause of PPH in our study was ruptured uterus (n=247: 16.99%). The frequency of ruptured

uterus in other studies done in Pakistan was 20%²⁴ & 1.14%²⁵. The variation in frequencies is because of variation in duration & number of patients in these studies. Out of 247 cases of ruptured uterus, 102 (41.3%) cases had STAH, which is in accordance with another study (45.2%) done in Karachi.²⁶

PPH is the major direct cause of maternal mortality across the globe and is responsible for one-third of all maternal deaths in Africa and Asia.¹⁶ In a WHO systematic review the leading cause of maternal death was haemorrhage signifying 27.1% (19.9-36.2) of maternal deaths & PPH due to atonic uterus was identified as the main cause of haemorrhage.²⁷ The result of our study reflect same picture as among 35 (2.41%) maternal deaths, more than half (51.43%) were due to atonic uterus, 25.72% due to DIC & 22.85% due to ruptured uterus. Local figures for mortality rate in patients with PPH are variable and various hospital based studies have reported 0-40% mortality in patients presented with PPH in various hospitals in Pakistan.^{5,6,28} However, out of all maternal deaths, PPH is still the leading cause, contributing for 27.2% of maternal mortality in Pakistan.³

International epidemiological studies have shown that obstetric haemorrhage & hypertensive disease in pregnancy are the main reasons for intensive care admission of obstetric patients.²⁹ In our study 24 (1.65%) patients developed serious complications like DIC, renal failure, pulmonary edema and ruptured bladder. Patients with renal failure & pulmonary edema in our study were referred to tertiary care hospital for intensive care & management. This is in accordance with a clinical review from

Pakistan showing that about half of obstetric patients admitted in ICU are with haemorrhage and 61% of patients have multi-organ failure.³⁰

CONCLUSION

In all the observed patients of PPH, atonic uterus and genital tract trauma were the main causes while DIC and ruptured uterus were main complications of PPH. Majority of patients were managed with various surgical procedures and about one third of patients had conservative medical management. Mortality was also observed and majority of deaths were due to atonic uterus and DIC.

LIMITATIONS AND RECOMMENDATIONS

Main limitation of our study was that it was conducted in a hospital setting and cannot represent the true figures of the population. More population-based studies are needed to determine the real burden and outcome of PPH in population. More in-depth studies are needed to explore the early identification of causes and management of PPH at primary and secondary level.

REFERENCES

1. Department of Reproductive Health and Research, World Health Organization (WHO). WHO Recommendations for the Prevention and Treatment of Postpartum Haemorrhage. Geneva: WHO; 2012. [Cited on: February 22, 2017]. Available from URL: http://apps.who.int/iris/bitstream/10665/75411/1/9789241548502_eng.pdf?ua=1
2. American College of Obstetricians and Gynecologists. ACOG Practice Bulletin: Clinical Management Guidelines for Obstetrician-Gynecologists Number 76, October 2006: postpartum hemorrhage. *Obstet Gynecol* 2006 Oct; 108(4):1039-47.
3. PDHS, National Institute of Population Studies & Demographic

- and Health Surveys. Pakistan Demographic and Health Survey. 2006-2007. [Cited on: February 22, 2017]. Available from URL: http://www.nips.org.pk/PDHS_-_2006-07.htm.
4. Landy HJ, Laughon SK, Bailit JL, Kominiarek MA, Gonzalez-Quintero VH, Ramirez M, et al. Characteristics associated with severe perineal and cervical lacerations during vaginal delivery. *Obstet Gynecol* 2011; 117:627-35. DOI: 10.1097/AOG.0b013e31820afaf2.
 5. Sheikh L, Najmi N, Khalid U, Saleem T. Evaluation of compliance and outcomes of a management protocol for massive postpartum hemorrhage at a tertiary care hospital in Pakistan. *BMC Pregnancy Childbirth* 2011;11(1):28. DOI: 10.1186/1471-2393-11-28.
 6. Bibi S, Danish N, Fawad A, Jamil M. An audit of primary post partum haemorrhage. *J Ayub Med Coll Abbottabad* 2007;19(4):102-6.
 7. Hoveyda F, MacKenzie IZ. Secondary postpartum haemorrhage: incidence, morbidity and current management. *Br J Obstet Gynaecol* 2001; 108(9):927-30.
 8. AbouZahr C. Global burden of maternal death and disability. *Br Med Bull* 2003;67:1-11.
 9. Weeks A. The prevention and treatment of postpartum haemorrhage: what do we know, and where do we go to next? *Br J Obstet Gynecol* 2015 Jan; 122(2): 202-10. DOI: 10.1111/1471-0528.13098.
 10. Munir SI, Sadiq A, Ishtiaq S. Frequency of causes of primary postpartum haemorrhage in a tertiary care hospital. *Ann King Edward Med Uni* 2015;21(1):27-32. DOI: 10.21649/akemu.v21i1.692
 11. Gani N, Ali TS. Prevalence and factors associated with maternal postpartum haemorrhage in Khyber Agency, Pakistan. *J Ayub Med Coll Abbottabad* 2013;25(1-2):81-5.
 12. Edhi MM, Aslam HM, Naqvi Z, Hashmi H. Postpartum hemorrhage: causes and management. *BMC Res Notes* 2013 Jun 18;6:236. DOI: 10.1186/1756-0500-6-236.
 13. Mousa HA, Blum J, Abou El Senoun G, Shakur H, Alfirevic Z. Treatment for primary postpartum haemorrhage. *Cochrane Database Syst Rev* 2014;(2):CD003249. DOI: 10.1002/14651858.CD003249.pub3.
 14. Alexander J, Thomas P, Sanghera J. Treatments for secondary postpartum haemorrhage. *Cochrane Database Syst Rev* 2002;(1):CD002867. DOI: 10.1002/14651858.CD002867.
 15. Calvert C, Thomas SL, Ronsmans C, Wagner KS, Adler AJ, Filippi V. Identifying Regional Variation in the Prevalence of Postpartum Haemorrhage: A Systematic Review and Meta-Analysis. *PLoS One* 2012;7(7):e41114. DOI: 10.1371/journal.pone.0041114.
 16. Sheldon WR, Blum J, Vogel JP, Souza JP, Gülmezoglu AM, Winikoff B, et al. Postpartum haemorrhage management, risks, and maternal outcomes: findings from the World Health Organization Multicountry Survey on Maternal and Newborn Health. *Br J Obstet Gynecol* 2014 Mar;(121 Suppl 1):5-13. DOI: 10.1111/1471-0528.12636.
 17. Carroli G, Cuesta C, Abalos E, Gülmezoglu AM. Epidemiology of postpartum haemorrhage: a systematic review. *Best Pract Res Clin Obstet Gynaecol* 2008 Dec;22(6):999-1012. DOI: 10.1016/j.bpobgyn.2008.08.004.
 18. Humza S, Saeed S, Ali H, Parkani GM, Kasi Z. Various presentations and management of primary postpartum haemorrhage at BMCH, Quetta, Pakistan. *Rawal Med J* 2017;42(1):68-72.
 19. Korejo R, Nasir A, Yasmin H, Bhutta S. Emergency obstetric hysterectomy. *J Pak Med Assoc* 2012 Dec;62(12):1322-5.
 20. Callaghan WM, Kuklina EV, Berg CJ. Trends in postpartum hemorrhage: United States, 1994-2006. *Am J Obstet Gynecol* 2010;202(4): 353.e1-6. DOI: 10.1016/j.ajog.2010.01.011.
 21. Duhan L, Nanda S, Sirohiwal D, Dahiya P, Singhal S, Vandana. A retrospective study of maternal and perinatal outcome in patients of postpartum haemorrhage in a tertiary care hospital. *Int J Reprod Contracept Obstet Gynecol* 2016 Jun;5(6):1897-901 DOI: 10.18203/2320-1770.ijrcog20161686.
 22. Kabiru WN, Jamieson D, Graves W, Lindsay M. Trends in operative vaginal delivery rates and associated maternal complication rates in an inner-city hospital. *Am J Obstet Gynecol* 2001;184(6):1112-4. DOI: 10.1067/mob.2001.115178.
 23. Caughey AB, Sandberg PL, Zlatnik MG, Thiet MP, Parer JT, Laros RK Jr. Forceps compared with vacuum: rates of neonatal and maternal morbidity. *Obstet Gynecol* 2005;106 (5 Pt 1):908-12. DOI: 10.1097/01.AOG.0000182616.39503.b2.
 24. Khooharo Y, Yousfani JZ, Malik SH, Amber A, Majeed N, Malik NH, et al. Incidence and management of rupture uterus in obstructed labour. *J Ayub Med Coll Abbottabad* 2013 Jan-Jun;25(1-2):149-51.
 25. Alam I, Khan A, Ahmed R, Begum N. A two Year Review of Uterine Rupture at Gynaecology Unit-A Ayub Teaching Hospital. *J Ayub Med Coll Abbottabad* 2000;12(2):21-2.
 26. Aziz S. Indication of Emergency Hysterectomy in Pakistani Patients. *J Soc Obstet Gynaecol Pak* 2017;7(1):45-9.
 27. Say L, Chou D, Gemmill A, Tunçalp Ö, Moller AB, Daniels J, et al. Global causes of maternal death: A WHO systematic analysis. *Lancet Glob Health* 2014;2(6):e32333. DOI:

- 10.1016/S2214-109X(14)70227-X.
28. Naz H, Sarwar I, Fawad A, Nisa AU. Maternal morbidity and mortality due to primary PPH--experience at Ayub Teaching Hospital Abbottabad. J Ayub Med Coll Abbottabad 2008 Apr-Jun;20(2):59-65.
29. Wanderer JP, Leffert LR, Mhyre JM, Kuklina EV, Callaghan WM, Bateman BT. Epidemiology of obstetric-related ICU admissions in Maryland: 1999-2008. Crit Care Med J 2013;41(8):1844-52. DOI: 10.1097/CCM.0b013e31828a3e24.
30. Qureshi R, Irfan Ahmed S, Raza A, Khurshid A, Chishti U. Obstetric patients in intensive care unit: Perspective from a teaching hospital in Pakistan. J Royal Soc Med Open 2016;7(11):1-8. DOI: 10.1177/2054270416663569.

AUTHOR'S CONTRIBUTION

Following authors have made substantial contributions to the manuscript as under:

FG: Concept & study design, acquisition, analysis & interpretation of data, drafting the manuscript, final approval of the version to be published

MJ: Acquisition of data, drafting the manuscript, critical revision, final approval of the version to be published

He: Acquisition of data, final approval of the version to be published

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

CONFLICT OF INTEREST

Authors declared no conflict of interest

GRANT SUPPORT AND FINANCIAL DISCLOSURE

NIL



This is an Open Access article distributed under the terms of the Creative Commons Attribution-NonCommercial 2.0 Generic License.

KMUJ web address: www.kmuj.kmu.edu.pk
Email address: kmuj@kmu.edu.pk