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Clinical Study and Outcome of Obstetric Hemorrhage in Tertiary Care Hospital in Rural Area

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Abstract: Objective: *1/To study the clinical profile,resuscitative and surgical interventions in cases of hemorrhagic shocks.2/To study maternal morbidity and mortality in hemorrhagic shock.*
Study Desigy : *Retrospective observational study.*
Materials and Methods: *In present study 100 patients of hemorrhagic shock who were in antepartum,intrapartum and postpartum period were included. A detailed obstetrics history was obtained.Depending on clinical features grading of shock was done and associated complications were recorded.*
Results: *Seven patients were in grade 4 shock.Most common maternal complications were massive transfusionsin(24%),disseminated intravascular coagulation in(17%),puerperal sepsis in(12%), Acute renal failure in(11%) were noted,9 patients needed mechanical ventilation. And 2 needed cardiopulmonary resuscitation. One maternal mortality was noted.*
Conclusion: *The management of obstetric haemorrhage is challenging task for all obstetrician.Therefore, risk factors should be carefully evaluated.This can be attributed to improved obstetric care, timely interventions and availability of blood and blood components.*
Keywords: *Maternal outcome, Obstetric Hemorrhage, Hemorrhagic shock*

I. Introduction

Obstetric haemorrhage remains a significant cause of maternal mortality and morbidity inspite of advances in medical and surgical management and blood transfusion facilities.WHO data indicates haemorrhage accounts for (35%) of maternal deaths worldwide.[1] Haemorrhagic shock is a serious complication, which may occur in many obstetrical situations. Antepartum, intrapartum and postpartum haemorrhage(PPH) can be managed effectively by concentrating on the management of the obstetrical cause of the bleeding.However, this is not always adequate and the pregnant woman needs further assessment and management to prevent complications.The aim of present study was to determine various causes of haemorragic shock throughtout pregnancy, during delivery and postpartum period and its management along with maternal outcome.

II. Material & Methods

Present study was conducted at Department of Obstetrics and Gynecology in Kamineni Institute of Medical Sciences, Narketpally from January 2014 toDecember 2014. It was a Retrospective observational study conducted on 100 cases of hemorrhagic shock who were in antepartum, intrapartum and postpartum period like in Early pregnancy- abortions,ectopic pregnancy ,vesicular mole, in Late pregnancy-abruption, placenta previa, in intrapartum and postpartum atonic,traumatic and Secondary PPH. Other causes of hemorrhages apart from pregnancy were excluded from the study.A detailed obstetrics history was obtained and patients were examined. Depending on clinical features grading of shock was done.[2]

"Table-1" Clinical features of hemorrhagic shock [2]

System	Early shock	Late shock
CNS	Altered mental status	Obtunded
Cardiovascular	Tachycardia, Orthostatic hypotension	Cardiac failure
Renal	Oliguria	Arrthythmia , Hypotension
Respiratory	Tachypnea	Tachypnea , Respiratory failure
Hepatic	No change	Liver failure
Gastrointestinal	No change	Mucosal bleeding
Haematological	Anaemia	Coagulopathy
Metabolic	None	Acidosis, Hypocalcemia Hypomagnesemia

Shock occurs when there is hypoperfusion of vital organs. Signs and symptoms of hemorrhagic shock will vary depending on the volume and rate of blood loss.[2,3]

"Table-2" Classification of hemorrhagic Shock [2,3]

S.No	Parameter	Compensated	Mild	Moderate	Severe
1	Blood loss(ml)	1000	1500	1500-2000	>2000
2	Heart rate(bpm)	100	>100	>120	>140
3	Blood pressure	Normal	Orthostatic change	Marked fall	Profound fall
4	Capillary refill	Normal	Maybe delayed	Usually delayed	Always delayed
5	Respiration rate	Normal	Mild increase	Moderate tachypnea	Marked tachypnea
6	Urinary output(ml)	>30	20-30	5-20	Anuria
7	Mental status	Normal agitated	Agitated	Confused	Lethargic/obtunded

A defined volume of blood loss is difficult to measure in most situations, and the loss evaluated visually is often underestimated by up to 50%.[4,5] The initial resuscitation is with isotonic crystalloid solution.Cross matched blood is extremely important in high risk patients. In an emergency situation 'O' negative blood can be transfused..After initial resucitation,investigation,diagnosis and definitive treatment.either by medical and surgical interventions are carried out to arrest the bleeding at the earliest. Maternal outcome measures were followed for mortality and morbidity. All information was gathered. Results were analyzed.

III. Results

The etiologies behind haemorrhagic shock in 100 patients were as follows as shown in table 3.

"Table-3" Distribution of Etiology of Haemorragic Shock

S.No	Different Stages & Etiology			Number of patients (n=100)	Percentage
1	Early Pregnancy	Abortion		2	2%
		Vesicular Mole		4	4%
		Ectopic pregnancy		15	15%
2	Late Pregnancy	Abruptio placentae		14	14%
		Placenta previa		7	7%
		Vasa previa		1	1%
3	Intrapartum & immediate postpartum	Atonicity	Idiopathic	7	7%
			Abruption	9	9%
			HELLP with DIC	10	10%
			AFLP with DIC	5	5%
			Dengue	1	1%
		Traumatic	Rupture uterus	9	9%
			Rudimentary horn rupture	1	1%
			Colporrhexis	3	3%
			Other Genital Tract Injuries	8	8%
			Rectus Sheath Haematoma	1	1%
4	Late postpartum	Secondary PPH		7	7%

Most of the patients presents in intrapartum and immediate postpartum period. Majority were unbooked and referred from outside as our institute is a tertiary care centre.

"Table-4" Distribution of grading of shock

S. No.	Etiology	Number of patients (n=100)			
		Grade-1	Grade-2	Grade-3	Grade-4
1	Abortion	2	-	-	-
2	Vesicular Mole	1	1	1	1
3	Ectopic pregnancy	8	3	3	1
4	Abruptio placentae	4	5	4	1
5	Placentaprevia or accreta	3	2	1	1
6	Vasa previa	1	-	-	-
7	Atonicity	6	12	7	2
8	Traumatic	10	9	3	1
9	Secondary PPH	2	4	1	-

"Table-5" Distribution of maternal Outcome

S.NO	maternal Outcome	Maternal complication	Number of patients (n=100)	Percentage
1	Morbidity	Massive Transfusions	24	24%
2		DIC	17	17%
3		Puerperal sepsis	12	12%
4		ARF (Renal failure)	11	11%
5		Mechanical ventilation.	9	9%
6		Cardiopulmonary Resuscitation	2	2%
7	Mortality	Mortality	1	1%

Major maternal complication seen was massive transfusions in (24%). Massive obstetric haemorrhage is variably defined as: blood loss >1500 ml; a decrease in haemoglobin <4 gm/dl; or acute transfusion requirement >4 units.[6,7] Two patients needed cardiopulmonary resuscitation. There was one maternal mortality was noted.

IV. Discussion

The management of obstetric haemorrhage is more challenging than haemorrhage in non-pregnant patients. In the pregnant woman an additional challenge is brought about by the physiological increase in intravascular volume by approximately 50% (i.e. 4–6 L). Therefore, the pregnant woman can lose a significant amount of blood before showing signs of haemorrhagic shock, such as tachycardia, hypotension and a cold, clammy skin. Signs of hypovolaemia occurs relatively late because of physiological changes in pregnancy. The extent of intravascular volume deficit is not reflected by visual estimates of vaginal bleeding.[1,2]

Etiology of haemorragic shock in our study is similar to study by others.[8] Haemorrhagic shock is caused by a reduction in circulating blood volume due to an acute loss of red blood cells. The decreased circulating volume leads to a decrease in oxygen supply to cells, which will then cause organ disfunction.[4] The human body tries to compensate for the blood loss. This mechanism aims to protect the vital organs (brain and heart) in an attempt to sustain life. The blood loss leads to inadequate tissue perfusion, which in turn leads to a decrease in oxygen supply to the body cells.[2]

If unrecognized or left untreated, cell death due to hypoxic injury will follow.[4] All efforts should be directed at restoring adequate oxygenation as soon as possible. The outcome is dependent on early recognition and on immediate and aggressive management, which relies on three basic principles: (1) giving supplemental oxygen, (2) arresting the bleeding, and (3) replacing fluid losses.[3,9].

Life threatening haemorrhage occurs as frequently as 6.6 per 1000 deliveries.[1].The key systems affected by hemorrhagic shock are the central nervous, cardiac, and renal systems.[10] In our study massive haemorrhage was slightly higher owing to tertiary care referral centre. Scenario of grade 4 shock as follow:

"Table-6" Clinical presentation of grade 4 shock

S.No	Clinical presentation of grade 4 shock	Management	Blood component therapy	Morbidity	Remark
1	G3P2L1 with 36weeks IUD, Abruptio,Huge RPC Around 3liter, Cardiac Arrest	LSCS Followed by caeserean hystrectomy	Massive tranfusions	Cardiopulmonary rescuitation	Mortality (ARF+ pulmonary odema)
2	Outside LSCS with atonic PPH. Uterus distended upto 36 weeks size/cardiac arrest.outside on table 6 Pack cell transfusion done.	Obstetric hysterectomy/ re-exploration was needed for massive intraperitoneal collection followed by internal iliac ligation.	Massive transfusions	Cardiopulmonary rescuitation + Mechanical ventilation	Recoverd
3	Ruptured ectopic/ Massive haemoperitonium	Laprotomy salpingectomy	Massive transfusions	DIC	Recoverd
4	Primi 36 weeks Dengue fever Thrombocytopenia, jaundice with fetal distress	LSCS+ atonic PPH (B Lynch suture)	Massive transfusions	DIC	Recoverd
5	G3P2L2 38 week 2prev LSCS with Rupture uterus	obstetric hysterectomy	Massive transfusions (Hb=2gm%)	CRF	Recoverd
6	G4P2L2A1 35 week with placenta accrete with profuse bleeding per vagina	obstetric hysterectomy	Massive transfusions	Mechanical ventilation	Recoverd
7	G2A1 with 20 week with invasive mole. With Massive haemoperitonium	Hystrectomy	Massive transfusions	Mechanical ventilation	Recoverd

It is important to call for help.The senior obstetrician, anesthetist, pediatrician if required as well as senior nursing staff should be alerted as soon as possible.Blood bank, laboratory as well as the operation theater should be alerted. Interventions to evaluate and control bleeding should be relatively aggressive.[11,12]
Protocols for the management of APH, PPH and other emergencies should be familiar to all staff in the labour ward. Record of the patient's vital signs, drugs administered, investigations requested, blood and blood products administered should be maintained in a systematic and meticulous manner. Surgical treatment like internal iliac artery ligation and hysterectomy should be considered if the haemorrhage does not respond to conservative measures and should not be delayed until the patient is in irreversible shock. This can be attributed to improved obstetric care, timely interventions and availability of blood and blood components.

V. Conclusion

Obstetric haemorrhage continues to be the leading cause of maternal mortality.Initial resuscitation with simultaneous identification of the cause and definitive treatment is important. Ready availability of blood and blood products may be life saving in many cases. Early resort to surgical methods is advisable rather than waiting till the shock is irreversible. to improve outcome. Antenatal services should be provided to all women specially to poor socioeconomic class. It should be managed in tertiary centers where there is advanced maternal and neonatal facilities.

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