Maternal and Fetal Outcome of Eclampsia Using Different Management protocols

Yehia Abd El Salam Wafa[1], Mohamed El Sayed Hammour[1], Mohamed Abd El Hameid Mohamed Gamal El Dein Dabeis[2]

[1]Obstetrics and Gynecology Department, Faculty of Medicine, Al-Azhar University, Egypt
[2]Obstetrics and Gynecology Department, Damanhour teaching Hospital, Egypt
mohamed.dabees@gmail.com

Abstract: Background: The objective is to evaluate the outcome of 50 cases of eclampsia managed in Damanhour teaching hospital. Main outcome measures include maternal and perinatal morbidity and mortality using different management protocols. **Methods:** This work is a case series report (descriptive study) dealing with 50 cases of eclampsia will be admitted and managed at Damanhour teaching hospital. Eclamptic patients are those with new onset seizures in women with pre-eclampsia, either admitted with eclampsia or developed seizures in the hospital. Data sources will include interview from patients and their attendants, obstetric record charts of the patients, referral letter in case of those who will be referred from any health facility. **Results:** As regard our study magnesium sulphate was effective in 88% of cases. The other management protocol using (magnesium sulphate+diazepam) was found to be effective in controlling 100% of fits yet it associated with higher rate of respiratory depression, hypoventilation and maternal mortality. **Conclusion:** The seriousness of eclampsia and the high maternal and fetal complication rate encountered necessitates the management of patients with eclampsia in tertiary care, Centers with both maternal and neonatal ICU facilities. Magnesium sulphate is the drug of choice in cases with eclampsia, yet using other protocols such as (Mg sulphate+Diazepam) may be beneficial regarding cases with recurrent fits or fits not controlled by Mg sulpahte alone.

Keywords: Maternal; Fetal; Outcome; Eclampsia; Management; protocol

1. Introduction

Pre-eclampsia is a common disorder with a reported incidence of 2-8% among pregnancies; however geographic, social, economic and racial differences are thought to be responsible for incidence rates up to 3 times higher in some populations *(Lopez et al 2001).*

Frequency of eclampsia is 0.1-0.3% among pregnancies with perinatal mortality rate 30% and maternal mortality rate 5-10%*(Noor et al 2004).*

Risk factors for eclampsia are primigravida, young maternal age, presence of pre-eclampsia, preexisting diabetes mellitus, family history of eclampsia, hypertension and maternal age above 40years also the risk increases with interval of 10 years or more since previous pregnancy *(Nicola 2005).*

Pregnant women with eclampsia are more likely to experience intrauterine growth restriction, still birth, early neonatal death and increased liability to operative interference. Maternal complications include accidental haemorrhage DIC, postpartum haemorrhage, persistent increase in blood pressure and proteinuria one week postpartum, heart failure, renal failure, cerebrovascular accidents and even maternal death *(Makhaseed and Musini 1996).*

Maternal condition on admission and associated complications are the major determinant of maternal outcome *(Sawhney et al 2000).*

Poverty, late presentation, lack of equipment and inexperienced management are the major contributory factors for both maternal and fetal outcome *(Okafor and Okeziec 2005).*

Pre-eclampsia\ eclampsia accounts for more than 50000 deaths worldwide each year also it is associated with fivefold increase perinatal mortality (*Lopez et al 2001).*

The major causes of perinatal mortality are prematurity and birth asphyxia. The clinical causes of maternal deaths are cardiopulmonary failure, acute renal failure, HELLP syndrome (haemolysis, elevated liver enzymes and low platelet count) and cerebrovascular accident *(Onuh and Aisien 2004).*

Maternal mortality was statistically higher in cases with jaundice, also there was a statistically significant relation between maternal complications and liver function tests, lactate dehydrogenase levels, and low platelet levels *(Demir et al 2006).*

Proteinuria is one of the two main criteria for the diagnosis of preeclampsia and is considered as an important prognostic factor for the maternal and perinatal outcome (*Ivanov and Stoikova 2005).*

Regular obstetrical ultrasound fetal surveillance in pre-eclamptic patients is important for assessment of fetal wellbeing. Doppler evaluation of high risk patients is more sensitive test than biophysical profile (*Nguku et al 2006).*

Selection of high risk cases for hospital confinement, early referral of cases of eclampsia and careful use of drugs to control eclamptic fits are recommended to reduce morbidity and mortality from eclampsia *(Ozumbia and Ibe 1993).*

Good results in the area of maternal deaths in association with sever pre-eclampsia and eclampsia during last 10 years are due to improved diagnostic and therapeutic measures in our field, especially neonatology, because obstetricians currently take the decision for termination of pregnancies earlier than before while symptoms of pre-eclampsia get worse (*Srp et al 2002).*

Aim of the work

The aim of the work is to evaluate the outcome of 50 cases of eclampsia managed in Damanhour teaching hospital. Main outcome measures include maternal and perinatal morbidity and mortality using different management protocols.

2. Patients and Methods

This work is a case series report (descriptive study) dealing with 50 cases of eclampsia will be admitted and managed at Damanhour teaching hospital.

Eclamptic patients are those with new onset seizures in women with pre-eclampsia, either admitted with eclampsia or developed seizures in the hospital.

Data sources will include interview from patients and their attendants, obstetric record charts of the patients, referral letter in case of those who will be referred from any health facility.

All patients will be subjected to the following:

A. Full history taking:

1. Age, gravidity, parity, date of last normal menstrual period to estimate the gestational age.

2. Medical history to exclude diseases as diabetes mellitus, chronic hypertension.

3. Symptoms as: headache, visual disturbances, epigastric pain, edema, oliguria and convulsion (timing and number).

B. Complete general examination:

Blood pressure will be measured using:

• Mercury sphygmomanometer.

• Appropriate size cuff.

• Korotkoff sounds: first (systolic) and fifth (diastolic) which is the disappearance of the sound.

C. Obstetric ultrasound examination:

Done after stabilization of the general condition to certify:

1. Gestational age.

2. Number of fetuses.

3. Viability of fetuses.

Measurements were done to confirm gestational age through measuring:

o The biparietal diameter (BPD).

o The head circumference (HC).

o The abdominal circumference (AC).

o The femur length (FL).

D. Blood sampling for:

1. Complete blood count.

2. Liver function tests (SGOT, SGPT and prothrombin activity).

3. Renal function tests (urea, creatinine).

4. Blood group.

E. Urine sample:

Test for proteinuria by dipstick method.

F. Modalities of management:

1. Medical (nursing care, control of convulsions and control of hypertension).

2. Obstetric (termination of pregnancy either by induction of labor or through surgical interference by cesarean section).

Patients were continuously monitored in the eclampsia room till they were stable and ambulatory.

G. Maternal outcome:

As regard

1. Maternal complications.

2. Maternal death.

3. Maternal recovery without complications.

H. Fetal outcome:

As regard

1. Gestational age at delivery.

2. Mode of delivery.

3. Admission to the neonatal intensive care unit.

4. Fetal death.

All collected data will be statistically analyzed and represented in tables.

Methods of Statistical Analysis

After data collection, they will coded and transferred into a specially designated format so as to be suitable for computer filling.

Following data entry, checking and verification processes will be carried out to avoid any errors during data entry, frequency analysis, cross tabulation, and manual revision will used to detect any errors.

The following statistical measures will be used:

1. Descriptive measures which includes the following:

- Count.

- Percentage.

- Arithmetic mean.

- Standard deviation.

- Minimum and maximum.

2. Statistical tests included.

- Pearson Chi-square test

- Likelihood Ratio.

- Fisher's Exact test.
- Linear by linear association.

3. Graphical presentation includes column graph.

3. Results

The study was conducted on 50 cases diagnosed as eclampsia and managed at *Damanhour teaching hospital*.

All cases were assessed by full history taking, general examination, laboratory investigations and ultrasound studies as mentioned before.

The following parameters were assessed:

1) Patient's age, gravidity and parity.
2) Symptoms:

Headache, visual disturbances, epigastric pain and convulsions.

3) Patient's systolic and diastolic blood pressure.
4) Degree of proteinuria by dipstick method.
5) Ultrasound parameters:

gestational age, number of fetus (single or multiple) and viability of the fetus.

6) Control of fits by:

(intravenous $MgSo_4$) or ($Mgso_4$ + Diazepam).

7) Mode of termination of pregnancy:

(normal) or (caesarean section).

8) Neonatal outcome including.

- Gestational age at delivery.
- Neonatal ICU admission.
- Neonatal death.

9) Maternal outcome as regard.

- Maternal death.
- Maternal complications.
- Maternal recovery without complications.

Out of 50 cases there were 5 cases delivered twins.

Table (1): Age distribution of eclamptic patients

	Minimum	Maximum	Mean	Median	Std. Deviation
Age	18	38	24.12	23.00	6.432

This table shows the median, mean and standard deviation regarding age of eclamptic patients.

Std=standard deviation.

Age	No. of cases	percent
<20	18	36
20-35	23	46
>35	9	18

This table shows frequency and percentage of eclampsia among different age groups.

Table (2): Presenting symptoms

Presentation	Number	Percent
Fits	20	40
Blurring of vision	9	18
Headache	20	40
Epigastric pain	18	36
Coma	2	4

This table shows frequency and percentage of different presenting symptoms for eclamptic patients.

Table (3): Obstetric history

	Minimum	Maximum	Mean	Median	Std. Deviation
Parity	0	5	0.46	0.00	1.014

This table shows median, mean and standard deviation for parity of eclamptic patients.

Std= standard deviation.

Obstetric history	No. of cases	percent
Primigravida	38	76
Multigravida	12	24

This table shows the number of cases and percentage regarding their obstetric history either primigravida or multigravida.

Table (4): Systolic and Diastolic Blood pressure

	systolic	Diastolic
Minimum	140	90
Maximum	210	140
Mean	173	113
median	180	110
Std. deviation	14.18	8.936

This table shows mean, median and standard deviation for eclamptic patients.

Std = standard deviation.

Systolic	No of cases	Percent	Diastolic	No of cases	Percent
140-160	10	20	90-110	40	80
>160	40	80	>110	10	20

This table shows the number of cases and percentage regarding different sytolic and diastolic blood pressure groups.

Table (5): Degree of proteinuria by dipstick

Proteinuria in (+)	Frequency	percent
1	5	10
2	15	30
3	30	60

This table shows frequency and percentage of different degrees of proteinuria regarding eclamptic patients.

Table (6): Investigations

	No of cases	Percent
platelets		
Normal	44	88
Decreased	6	12
prothrombin		
Normal	46	92
Decreased	4	8
SGOT		
Normal	35	70
Elevated	15	30
SGPT		
Normal	38	76
Elevated	12	24
Urea		
Normal	35	70
Elevated	15	30
Creatinine		
Normal	42	84
Elevated	8	16

This table shows the number of cases and percentage of (normal and abnormal) results regarding different laboratory investigations.

Table (7): Gestational age in weeks

Minimum	Maximum	Median	Mean	Std. deviation
24	40	37.00	36.00	3.687

This table shows median, mean and standard deviation for gestational age of eclamptic patients.
Std = standard deviation.

Gestational age	Number of cases	Percent
<28 weeks	1	1.18
28-36 weeks	14	25.45
>36 weeks	40	72.72

This table shows number of cases and percentage of different gestational age groupsregardingeclamptic patients.

Table (8): Onset of eclamptic fit

Onset of eclamptic fit	No of fits	Frequency	Percent
Ante partum	1	12	24
	2	13	26
	3	6	12
	4	5	10
	total	36	72
Intrapartum	1	3	6
	2	7	14
	total	10	20
Postpartum	2	4	8

This table shows the number, frequency and percentage of fits with eclamptic patients regarding their onset whether antepartum, intrapartum or postpartum.

Table (9): Maternal complications

Maternal complications	frequency	Percent
Accidental hge	6	12
Postpartum hge	6	12
Renal failure	1	2
HELLP syndrome	4	8
Cerebral hge and maternal death	1	2
Total	18	36

This table shows the frequency and percentage of different maternal complications that occur with eclamptic patients.

Table (10): Systolic BP and maternal complications

complications	140-180mmhg	>180mmhg	Percent
Accidental hge	3	3	12
Post partum hge	2	4	12
Renal failure		1	2
HELLP syndrome	1	3	8
		1	2
Cerebral hge	6	12	36
Total			

This table shows the frequency and percentage of different maternal complication according to their relation with different blood pressure groups.

Table (11): Age and maternal complications

Maternal complications	Age			Percent
	<20	20-35	>35	
Accidental hge	1	2	3	12
Postpartum hge	1	3	2	12
Renal failure			1	2
HELLP		2	2	8
Cerebral hge			1	2
Total	2	7	9	36

This table shows the frequency and percentage of different maternal complications according to their relation to different age groups.

Table (12): Fetal complications

Fetal complications	frequency	Percent
NICU admission	23/55	41.8
Stillbirth	13/55	23.6
Neonatal death	7/55	12.7
Total	43/55	78.18

5 cases delivered twins
This table shows the frequency and percentage of different fetal complications that occur with eclamptic patients.

Table (13): Mode of termination of pregnancy

Mode of termination	Frequency	percent
Vaginal	13	26
CS	37	74

This table shows the frequency and percentage of different modes of termination for eclamptic patients.

Table (14) a: Control of fits by intravenous MgSo$_4$

Fit control by MgSo4	Frequency	Percent
Controlled	22	88
Not controlled	3	12

This table shows the frequency and percentage of cases controlled and not controlled using intavenous MgSo4.

Table (14) b: Control of fits by intravenous MgSo$_4$+Diazepam

Fit control by MgSo4	Frequency	Percent
Controlled	25	100
Not controlled	0	0

This table shows the frequency and percentage of cases controlled and not controlled using MgSo4 + Diazepam.

Table (15): Relation between gestational age and fetal complications

Gestational age				
Fetal complication	24-28w	28-36w	> 36w	Total
NICU admission		5/11	18/43	23
Still birth	1/1	4/11	8/43	13
Neonatal death		2/11	5/43	7
Total	1	11	31	43

- **12 babies delivered without complications.**
- **5 cases delivered twins.**

This table shows frequency of different fetal complications with different gestational age groups

**Table (16): Comparison between outcomes of different management protocols**

Outcomes	Mg sulphate	Mg sulphate + Diazepam
Recurrence of fits	3/25	1/25
Maternal mortality	1/25	0/25
Perinatal mortality	11/28	9/27
Respiratory depression & Hypoventilation	4/25	5/25

This table shows the frequency of different outcomes using two different management protocols. (MgSo4 and "MgSo4 + diazepam").
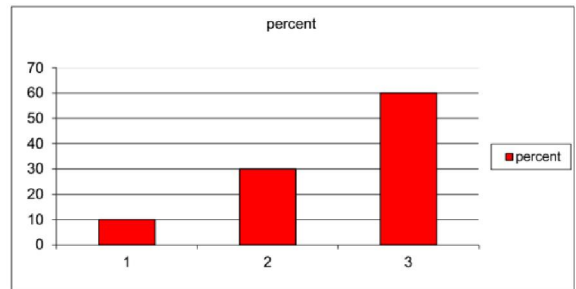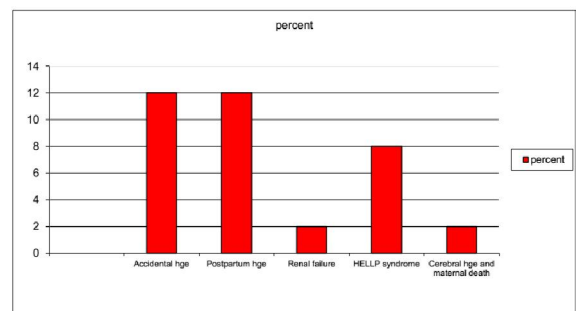

Figure (1): Degree of proteinuria in + by dipstick

A graphical presentation showing the degree of proteinuria of eclamptic patients by Dipstick.
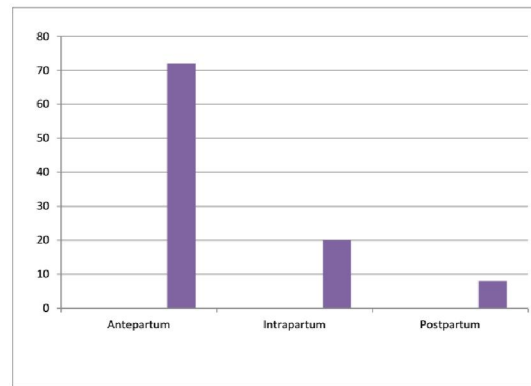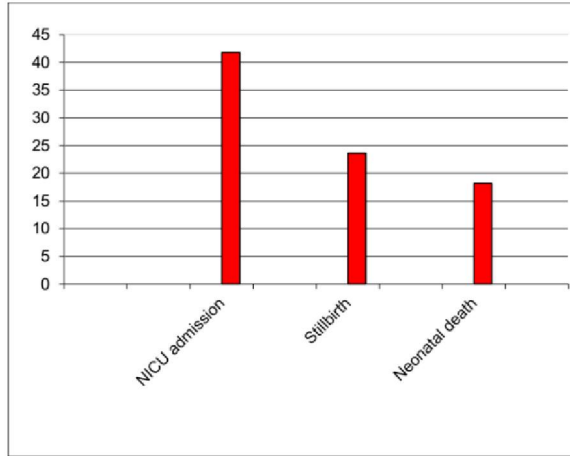

Figure (2): Onset of eclamptic fits

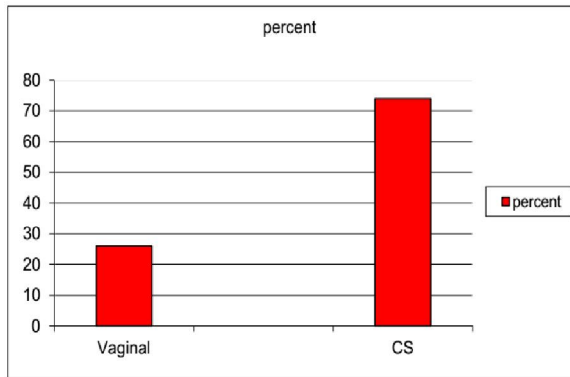A graphical presentation showing the onset of eclamptic fits.

Figure (3): Maternal complications

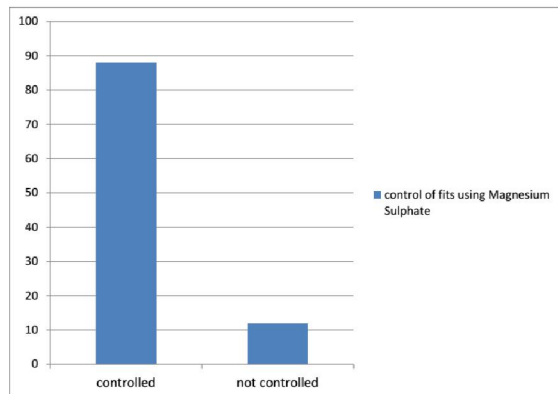A graphical presentation showing the different maternal complications of eclamptic patients.

Figure (4): Fetal complications

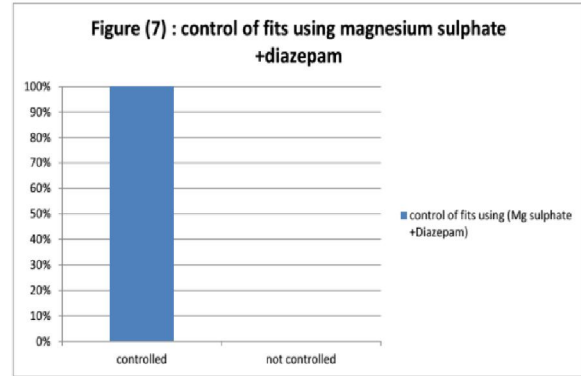A graphical presentation showing different fetal complications of eclamptic women.

Figure (5): Mode of termination

A graphical presentation showing the modes of termination of eclamptic women.
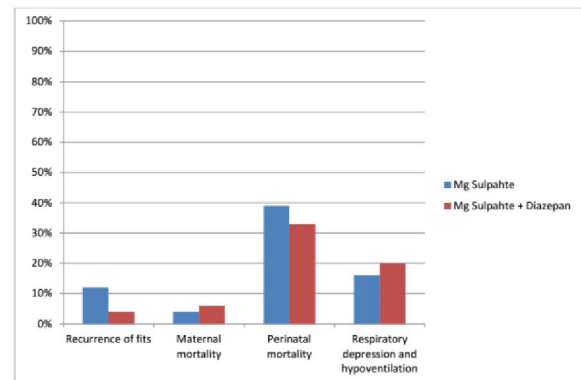

Figure (6) control of fits using magnesium sulphate

A graphical presentation showing control of fits using magnesium sulphate.

A graphical presentation showing control of fits using magnesium sulphate +diazepam.

Figure (8): comparison between outcome of different management protocols

A graphical presentation showing a comparison between outcomes using the different management protocols.

4. Discussion

Eclampsia is a common cause of maternal mortality worldwide particularly in the developing countries. It is estimated that every year eclampsia is associated with about 50 000 maternal deaths worldwide, most of which occur in the developing countries where there is low utilization of both antenatal and intrapartum care and the patients may present to the hospital as a last resort (***Tukur 2009***).

The opportunity to detect women at the pre-eclamptic phase is therefore usually lost. In addition, the World Health Organization (WHO) estimates that only 40% of births in the developing countries take place in health facilities. When delivery care is sought, it is done late, after a lot of delays and this contributes to maternal mortality *(Tukur and* **Umar 2009).**

Yet, prenatal care and supervision of delivery by trained birth attendants are said to be the best and cost-effective means of reducing maternal and perinatal mortality and morbidity. Even for those women who

eventually make it to the hospital, they may be attended to in facilities with shortage of staff, equipment and/or drugs. Despite evidence that magnesium sulfate is the most effective anticonvulsant for prevention and treatment of eclampsia and it has been used in the developing countries and shown to have a favorable maternal and fetal outcome, yet it has remained unavailable in most centers *(Tukur and Umar 2009*).

The current study was conducted to determine the clinical presentation of eclampsia, its management, as well as maternal and fetal outcome using different management protocols.

It is a case series (descriptive study) reporting the outcome of 50 cases of eclampsia admitted and managed at Damanhour teaching hospital. In our study the ages ranged between 18 and 38 years with mean age 24.12, 36% of cases were less than 20years and 46%were between 20and 35years and 18% were more than 35years. The present results matches those reported by Suman et al 2003 who found that 45.79%were below 20years, 50%were between 20 and 35 years while 4.21% were more than 35 years **(Suman et al 2003).**

according to Tukur et al 2007 the majority of patients (58.5 %) were aged less than 20 years **(Tukur et al 2007).**

Yet, it contradicts another study carried out in the department of Gynecology at Lady Reading hospital, Peshawar in the year 2000 which reported that 7.5 % of cases were below 20 years, 64% between 29 and 35 years and 28.3% were more than 30 years *(Shehla et al 2004).*

As regard the relation between the incidence of eclampsia and gravidity, the results of our study was found that 76% of cases were primigravidas, also it was found that the incidence of eclampsia in primigravidas was highest at the extreme of the child bearing ages; these results are in agreement with other studies.

According to Sibai 1988, primigravidas are far more likely to develop eclampsia than are multiparas and that 74% of cases of eclampsia occur during first pregnancy **(Sibai et al 1988).** According to Suman et al 2003, 75% of cases were primigravidas **(Suman et al 2003).** According to the study that was carried out in the department of Gynecology at Lady Reading hospital, Peshawar in the year 2000, it was found that 55% of cases were primigravidas **(Shehla et al 2004).** According to Tukur et al 2007**,** the highest frequency (78.3%) was recorded in the Primigravidas **(Tukur et al 2007).**

The incidence of eclampsia in primigravidas was highest at the extreme of the child bearing ages, this can be explained by the fact that young Primigravidas may not ask for prenatal care due to ignorance or shame, while the old primigravidas may suffer from the superimposition of eclampsia upon chronic hypertension.

As regard the onset of eclamptic fits, in our study antepartum and intrapartum fits constituted 92% of cases while postpartum fits were 8%. These results are in agreement with Suman et al 2003 who reported that antepartum and intrapartum fits constituted 78%, while postpartum fits were 22% **(Suman et al 2003).** Also the study that was carried out in the department of Gynecology at Lady Reading hospital, Peshawar in the year 2000 reported that antepartum and intrapartum fits constituted 75.5% of cases and postpartum fits were 24.5% **(Shehla et al 2004)**. According to Tukur et al 2007 the clinical type of eclampsia was intrapartum in 54.1%, antepartum in 32.9% and postpartum in 13% of the patients (**Tukur et al 2007).** According to Onouh and Aisien 2004, 86.4% of the patients developed fits in the predelivery stage **(Onouh and Aisien 2004).**

According to Shamma et al 2005, 44% had convulsions antepartum and 17% had intrapartum eclampsia, 39% postpartum. These results reflect improper antenatal care in the studied group **(Shamma et al 2005).**

Most cases of eclampsia develop during the third trimester and the incidence of eclampsia increases gradually as we approach near term, in our study 70% of cases were beyond 36 weeks of gestation, 28% of cases were between 28-36 weeks of gestation and 2% of cases were between 24-28 weeks of gestation.

However, in 200 eclamptic cases studied by Sibai 1988, it was found that 47% of eclamptic fits developed between 27-36 weeks of gestation, 48% between 37-41 weeks of gestation, while only 5% of cases developed convulsions before 26 weeks of gestation **(Sibai et al 1988).**

Eclampsia is a major cause of maternal morbidity and mortality worldwide. In our study 36% of cases had at least one major complication, 12% of cases had accidental haemorrhage, 12% had postpartum haemorrhage, 2% had renal failure, 8% had HELLP syndrome and 2% had cerebral haemorrhage.

In comparison to the study performed by Bushra and Sumera 2008, 40% of cases had one of major maternal complications, 21.9% had pulmonary oedema, 6.6% had HELLP syndrome, 5.2% had renal failure, 4.2% had disseminated intravascular coagulation, 2.3% had cerebrovascular accident, however maternal mortality was 6.19% **(Bushra and Sumera 2008).**

however according to Akinola et al 2008, maternal complications occurred in 26.5% of cases, acute renal failure 14.7%, aspiration pneumonitis 9.6% and cerebrovascular accident 2.2%, the maternal case fatality rate of 18.3% **(Akinola et al 2008).**

According to Douglas and Redman 1994, 35% of cases had at least one major complication. Eclampsia accounts for approximately 50,000 maternal deaths worldwide annually. In our study maternal mortality was 2% and the cause of maternal mortality was cerebral hemorrhage, this result matches that found by Douglas and Redman 1994 who reported that the maternal case fatality was 1.8% **(Douglas and Redman 1994).**

The study performed by Suman et al 2003 reported maternal mortality was 2.63% in patients with eclampsia **(Suman et al 2003)**.

Sibai 1988 mentioned that the incidence of eclampsia related maternal mortality in Memphis (USA) was 0.5% **(Sibai 1988)**.

In contrast to our results Akinkugbe and Coker1980, in Nigeria reported that the incidence of maternal mortality from eclampsia was 10.6% **(Akinkugbe and Coker1980).** While Lopez-Lierea 1982, reported a maternal mortality of 13.9% among Mexican women with eclampsia **(Lopez-Lierea 1982).**

The difference in maternal mortality in the recent studies and the studied that were done in the past can be explained by the improvement of obstetric care by having high index of suspicion, using magnesium sulfate prophylaxis for all cases of severe pre-eclampsia, in addition to a community based approach to improve community health education and prenatal care. Eclampsia continues to be a major cause of perinatal mortality and morbidity.

In our results perinatal mortality was 36.3%. 23.6% out of them were still births and 12.7% were neonatal deaths. Also the results of the present study revealed that fetuses delivered before 36 weeks gestational age had higher perinatal mortality than those delivered at term, fetuses delivered at extreme prematurity between24-28 weeks revealed no living fetuses.

These results are in agree with Sibai 1988, in his study of 200 pregnant women with eclampsia with 208 neonates the reported perinatal mortality varies between 10 and 28%, there were 14 stillbirth (6.7%) and 12 neonatal deaths (5. 8%) **(Sibai et al 1988).**

also it matches Suman et al 2003, who found that perinatal mortality was 33.98%, 24.95% of them were stillbirth and 9.02% were reported as neonatal deaths **(Suman et al 2003).** the study which was carried out in the department of Gynecology at Lady Reading Hospital, Peshawar, In the year 2000, revealed that perinatal mortality was 35.8%, 30% were still births while only 5.6% were neonatal deaths *(Shehla et al 2004).*

also the study performed by Nadkarni et al 2001, reported that perinatal mortality was 36.9%. The main risks to the fetus were prematurity, severe fetal growth restriction and abruptio placentae**.** However the percentage of neonatal mortality in this study does not represent the actual one as the follow up of neonatal outcome of eclamptic cases is usually stopped often after discharge of the mother from the hospital **(Nadkarni et al 2001).**

According to our study neonatal ICU admission was 41.8% which matches the results that was reported by Nusrat et al 2010, NICU admission was 44.6% **(Nusrat et al 2010).**

As regard mode of termination of pregnancy and its timing, once convulsions had been controlled and the woman regain consciousness, termination of pregnancy was done either medically or surgically according to the condition of the mother and fetus. The mode of delivery should be based on obstetric indications, in the absence of fetal malpresentation or fetal distress, oxytocin should be initiated to induce labor, patients with an unfavorable cervix with a gestational age of 30 weeks or less, once stabilized, should be delivered electively by cesarean delivery. This approach is preferred because pregnancies prior to 30 weeks' gestation with eclampsia have a higher risk of complications intrapartum. Intrapartum complications include fetal growth retardation (30%), fetal distress (30%) and Abruption (23%)**.**

In our study 74% of cases delivered by cesarean section and 26% delivered by normal vaginal delivery.

The present results matches those reported by, Nusrat et al 2010, who found that 66.6% of cases were terminated by cesarean section while vaginal delivery was performed in 33.3% **(Nusrat et al 2010).**

Yet it contradicts another study performed by Tukur et al 2007, who found that 51.7%of the patients were delivered by cesarean section while the others had vaginal delivery **(Tukur et al 2007).** This difference could be attributed to, the majority of cases in the last study were intrapartum eclampsia also to the use assisted vaginal delivery (ventouse and forceps).

Parentral magnesium sulphate is the drug of choice to treat and prevent eclamptic fits due to the fact that it does not cause any significant maternal or neonatal central nervous system depression when used properly.

As regard our study magnesium sulphate was effective in 88% of cases, which matches the results that was reported by Suman et al 2003; Low dose magnesium sulphate protocol has proved its efficacy as an effective anticonvulsant therapy in eclampsia in 91 % of cases **(Suman et al 2003).**

This also matches the results of Macdonald et al 2012 which included Six studies (1831 women with eclampsia) were included, from academic centers in Bangladesh, India, Pakistan, and Nigeria, together with 2 population-based UK studies **(Macdonald et al 2102).**

The other management protocol using (magnesium sulphate+diazepam) was found to be effective in controlling 100% of fits yet it associated with higher rate of respiratory depression, hypoventilation and maternal mortality.

Conclusion

The seriousness of eclampsia and the high maternal and fetal complication rate encountered necessitates the management of patients with eclampsia in tertiary care, Centers with both maternal and neonatal ICU facilities.

Magnesium sulphate is the drug of choice in cases with eclampsia, yet using other protocols such as (Mg sulphate+Diazepam) may be beneficial regarding cases with recurrent fits or fits not controlled by Mg sulpahte alone.

References
1. Akinola O, Fabamwo A, Gbadegesin A, Ottun & O Kusemiju2008. Improving the Clinical Outcome in Cases of Eclampsia: The Experience at Lagos State University Teaching Hospital, Ikeja. The Internet Journal of third world Medicine. (6:2).
2. Bushra Sher Zaman, Sumera Siddique2008. Fetomaternal outcome in eclamptic cases at Bahawal Victoria hospital, Bahwalpur. J Fatima Jinnah Med Coll Lahore. (2(2):71-2).
3. Demir SC,Evruke C, Ozgunen FT, Urunsak IF, Candan E, Kadayifci O. Factors that influence morbidity and mortality in severe preeclampsia, eclampsia and hemolysis, elevated liver enzymes, and low platelet count syndrome. Saudi Med J. 2006 Jul; 27(7):1015-8.
4. Ivanov S, Stoikova V. Association between the protein loss and the perinatal outcome in pre-eclamptic pregnantwomen. Akush Ginekol (Sofia): 2005; 44(7): 11-5.
5. Lopez J P, Casas JP, Serrano N. Preeclampsia: from epidemiological observations to molecular mechanisms. Braz J Med Biol Res 2001; 34: 1227 - 35. 12.
6. McDonald, SD; Lutsiv, O; Dzaja, N; Duley, L (August 2012). "A systematic review of maternal and infant outcomes following magnesium sulfate for pre-eclampsia/eclampsia in real-world use.". International journal of gynaecology and obstetrics: the official organ of the International Federation of Gynaecology and Obstetrics. (118 (2): 90–6).
7. Makhseed M,, Musini V. Eclampsia in Kuwait 1981-1993. Aust N Z J Obestet Gynaecol; 1996; 36(3):258-63.
8. Nadkarni, J Bahl, P Barekh2001. Perinatal outcomes in pregnancy associated hypertension. Indian pediatrics. 38:174-8.
9. Nguku SW, Wanyoike-Gichuhi J, Aywak A A. Biophysical Profile Scores and Resistance Indices of the Umbilical Artery As Seen in Patients with Pregnancy Induced Hypertension. East Afr Med J.2006; 83(3):96-101.
10. Nicola Pocock. Systematic review of risk factors for pre-eclampsia BMj 2005: 330:565.
11. Noor S, Halimi M, Faiz NR, Gull F, Akbar N. Magnesium sulphate in the prophylaxis and treatm ent of eclampsia. J Ayub Med Coll Abbottabad.
12. Nusrat Nisar, Ahson Memon, Nisar Ahmed Sohoo, Munir Ahmed2010. Hypertensive disorders of pregnancy: Frequency, Maternal and Fetal outcomes. Pakistan armed forces medical journal. (1:9630-48).
13. Okafor UV and Okezie O. Maternal and fetal outcome of anaesthesia for caeserean delivery in pre-eclampsia in Engu, Nigeria: a retrospective observational study. Int J Obestet Anasthesia; 2005; 14(2): 108-13.
14. Onuh SO, Aisien AO. Maternal and fetal outcomes in eclamotic patients in Benin City, Nigeria. J Obestet Gynecol. 2004; 24(7):765-8.
15. Sardesai Suman, Maira Shivanjali, Patil Ajit, Patil Uday2003. Low Dose Magnesium Sulphate Therapy for Eclampsia and Imminent Eclampsia: Regime Tailored for Indian Women. J Obestet Gynecol Ind. (53 (6):546-5o).
16. Sawhaney H and Aqqarwal N. Maternal mortality associated with eclampsia and sever pre-eclampsia of pregnancy. J Obestet Gynaecol Res. 2000; 26(5):351-6.
17. Shehla Noor, Mussarat Halimi, Nasreen Ruby Faiz, Fauzia Gull, Nasreen Akbar2004. Magnesium Sulphate in the prophylaxis and treatment of eclampsia. J Ayub Med Coll Abotted. (16(2):50-4).
18. Sibai BM, Lindheimer M, Hauth J, Caritis S, Van Dorsten P, Klebanoff M, Mac Pherson C, Landon M, Miodovnik M, Paul R, Meis P, Dombrowski M1998. Risk factors for preeclampsia, abruptio placentae, and adverse neonatal outcomes among women with chronic hypertension. National Institute of Child Health and Human Development Network of Maternal-Fetal Medicine Units. NEJM. (339(10): 667-71).
19. Srp B, Velebil P, Kvasnicka J. Fatal complications in pre-eclampsia and eclampsia. Geska Gynekol: 2002; 67(6):365-71.
20. Tukur J, Umar BA, Rabiu A2007. Pattern of eclampsia in a tertiary health facility situated in a semi rural town in northern Nigeria. Annals of African medicine. (6(4):164-7).
21. Tukur J2009. The use of magnesium sulphate for the treatment of severe pre-eclampsia and eclampsia. Annals of African medicine. 8(2):76-80.

8/2/2017