Vol. 1, No. 1, September, 2011

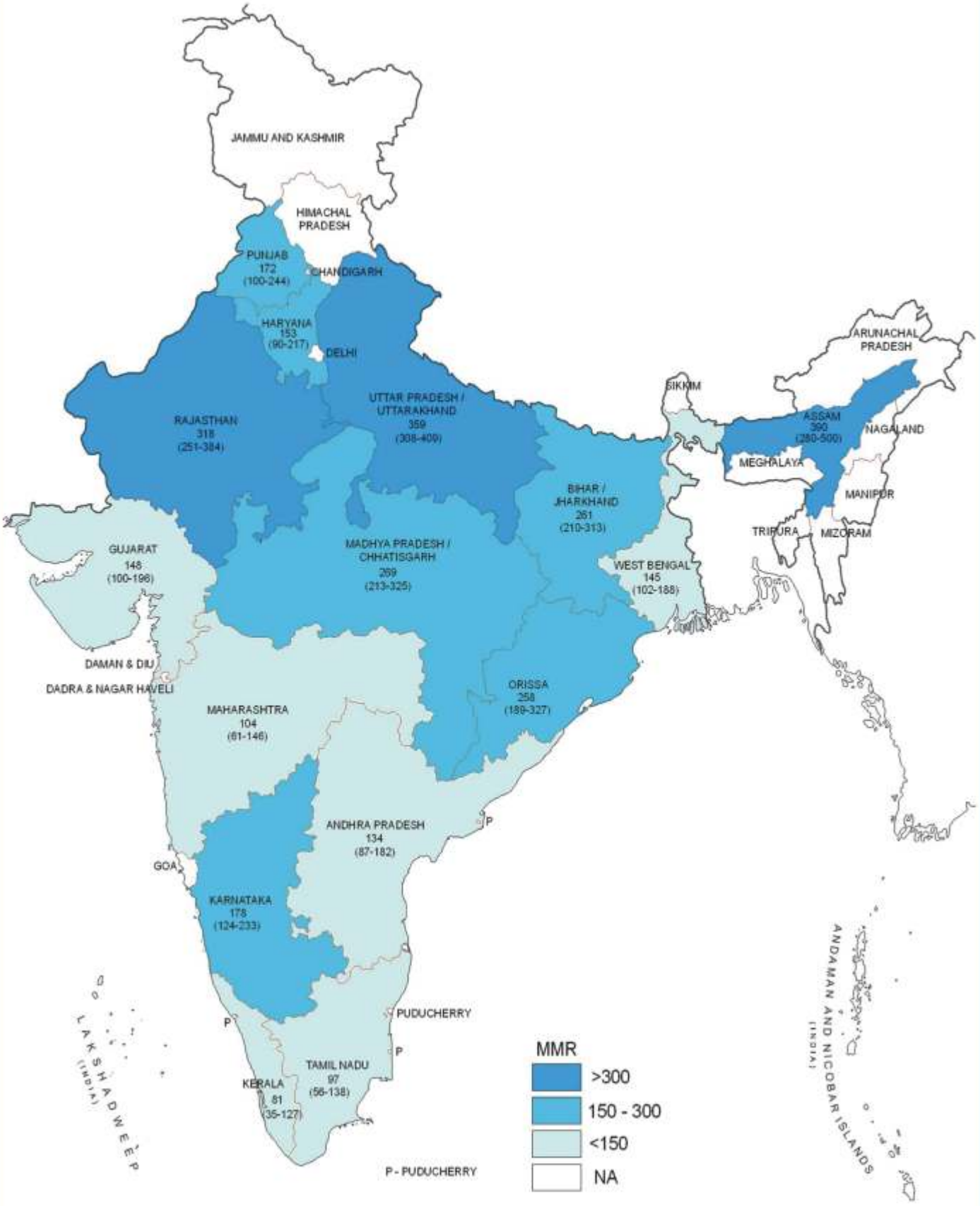
COMPREHENSIVE BULLETIN ON SAFE MOTHERHOOD INITIATIVE

Theme : PIH

Safe Motherhood Committee - FOGSI

Editor :
Dr. Sadhana Gupta
Chairperson - Safe Motherhood Committee (2011-2013)

MATERNAL MORTALITY RATIO (MMR) ALONG WITH 95% CONFIDENCE INTERVAL, INDIA AND STATES, 2007-2009



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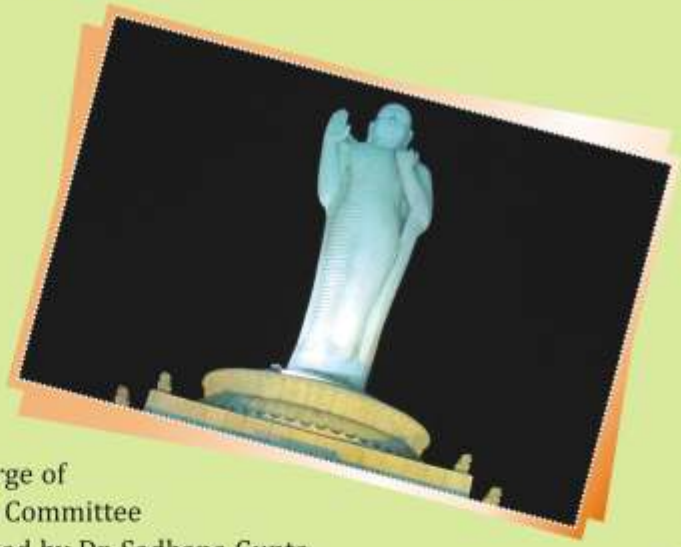
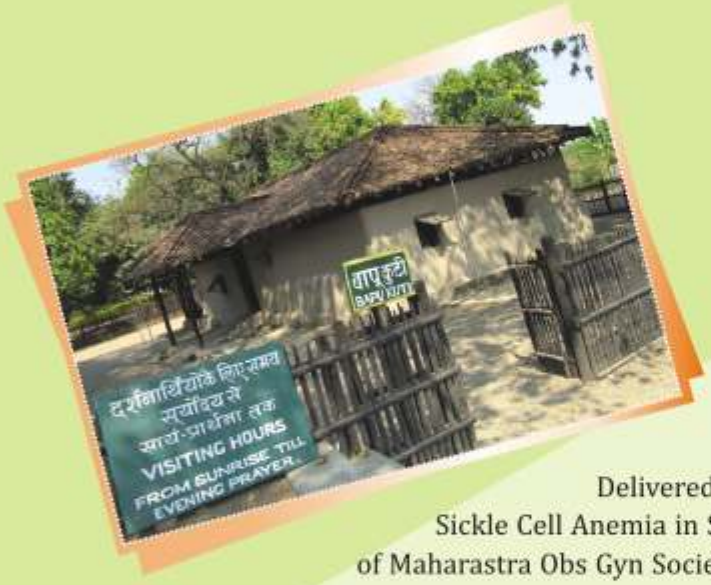


Taking charge of
Safe Motherhood Committee
on 7th January 2011 at Hyderabad by Dr. Sadhana Gupta.



Delivered lecture on
Sickle Cell Anemia in Silver Jublee Conference
of Maharastra Obs Gyn Society at Nagpur on 13th February

Chaired the session of
Obstetrical Dilemma in ICOG – FIGO Conference on
18th - 19th March 2011 at Goa.

Contents ...

Contribution of Safe Motherhood Committee to Academic Events of FOGSI

Delivered scientific talk on Down Syndrome Screening in FIGO–FOGSI conference on 08th–10th April at Mumbai

International Congress on Contraception on 4th – 5th May at Kolkata participated as speaker

Delivered scientific talk on Placenta Praevia in International Congress on Obstetrical Emergency on 29th–31st July 2011 at Bangaluru

Coordinated workshop with Dr. Bhashkar Pal on Cesarean Section in South Zone Yuva FOGSI on 4th – 5th July 2011 at Chennai

St George's
University of London

Dear Dr Sadhana Gupta and my friends,

My very best wishes to you, your committee and fellow obstetricians for devoting your time energy and effort to reduce maternal mortality in India. The recent figures have shown that the Maternal Mortality has reduced Globally and in India. One has to be proud about this achievement. However the rate of decline is not sufficient to attain the expected Millenium Development Goal. Hence more work is needed. India contributes the most in numbers for the Global figures because of the population density of the country. For each maternal death there are twenty cases of maternal morbidity. In addition there is a large number of still births and new born deaths and this is more so in women with hypertensive disease in pregnancy. Hypertensive disease can be prevented to a degree but can be diagnosed by adequate antenatal care. Severe hypertensive disease and eclampsia should be managed by proper and prompt treatment of hypertension, anticonvulsants when needed and appropriate timing of delivery. The late Professor Krishna Menon showed the world the disastrous consequences for the mother and baby of the delay in delivery after eclampsia. Hypertensive cerebrovascular accidents are common with systolic hypertension >160 mm Hg. This can be picked up by using a blood pressure machine with cuff and by palpating the pulse and can be taught to many health care providers. Appropriate referral or control the BP with modern oral medication can help to reduce morbidity and mortality. I praise your committee for devicing programs that could be applied in different settings with available financial and human resourses to tackle hypertensive disorders in pregnancy. Innovative ways of having the possibility of automatic blood pressue measurement in shopping centers and schools organised by local voluntary bodies with your advice, assistance and supervision would be a great step forwards. Mobilising the General Practitioners or Family Physicians who are the back bone of the society to work with you and training nurse practitioners who can help to measure blood pressure and refer for appropriate management will go a long way. Wishing you and your team the very best for innovative ideas to help every pregnant mother.

With warm regards,

Sir Sabaratnam Arulkumaran
Professor & Head of Obstetrics & Gynaecology &
Deputy Head of Clinical Sciences,
St George's University of London

This is my pleasure to congratulate and applaud the effort of chairperson safe motherhood committee Dr. Sadhana Gupta in publishing the safe motherhood bulletin for benefit of all FOGSI members. Maternal morbidity and mortality is still unacceptably high in our country, more so in some states like Uttar Pradesh, Uttaranchal, North East States, Orissa, Madhya Pradesh, Chattisgarh for various social, political, regional and medical regions. Sequential issues of this magazine will take up all aspect of important causes of severe acute maternal morbidity and maternal mortality and our members will find diagnostic and management protocol for confident handling of pregnant women in various grades of facility setting.

I also admire the hard work of Dr. Sadhana Gupta for propagating three issues close to my heart through organizing maternal mortality workshops that is – judicious use of I/V iron sucrose in management of Anemia, use of Misoprostol in Postpartum haemorrhage,esp. in low resource setting and universal use of Magnesium Sulphate in severe PIH.

FOGSI is a great organization of more than 25,000 dedicated practicing obstetrician and Gynecologists. I call upon each member to adopt 2 mother for full obstetric care belonging to below poverty line and work for rural women. This will show the real strength of FOGSI WILL & YOUR SKIL.

I wish you happy and thoughtful reading.

Dr. P.C. Mahapatra
Presdent FOGSI 2011

M E S S A G E

At the outset I congratulate Dr. Sadhana Gupta for this bulletin on behalf of her Committee. Dr. Sadhana is a very hardworking FOGSIAN committed to the cause of women's health and has been strictly and steadily been working on the path befitting the FOGSI mission statement. I have always been in appreciation of her hard work and amazed by the innovative she has undertaken to reach out to people .Maternal Mortality has become a prime and an extremely sore point in the context of women's health and any amount of work is welcome. This Bulletin will help to provide a platform to display the issues in the vastly different parts of our country. There are many areas which are unreachable and such a bulletin definitely will give a great opportunity to exchange issues regarding maternal mortality.

The framework of this bulletin has been sent to me by Dr. Sadhana and I appreciate the content design of the same .I am sure it will definitely be of great value and will also be a projection of the work FOGSI has been doing towards maternal mortality. We have in our capacity tried to work towards this burning issue time has arrived to take a big step .as you all are aware the Save the Mother and Newborn initiative of FOGSI has been launched and we have been able to knock at the doors of the policy makers. FOGSI has taken a big stride in launching this project and as the convener of this program I urge everyone to join this initiative. We are in the process of now formalizing the various essential steps for the same and the means of taking them further and I urge everyone to participate in a big way

I wish Dr. Sadhana all the best in her effort and wish the bulletin a grans success. I also pray it achieves the noble purpose as envisaged by its creator

Wish you all the best and let's join hands to save our mothers

Warm regards
Dr. Sanjay Gupte
President FOGSI 2010

It gives me immense pleasure to know that Dr. Sadhana Gupta, Chairman, Safe Motherhood Committee is publishing a Bulletin focused on PIH.

I wish her & her team of Safe Motherhood Committee all the very best for her future endeavors. I will appreciate feedbacks & constructive critism from readers to present better reading material in future.

Yours sincerely,

Dr. P. K. Shah
Secretary General
President Elect FOGSI 2012

M E S S A G E

Mothers, we love; Mothers, we revere; Mothers are the assurance we want. Because what a mother means to a child, no other person can. And we as obstetricians play an important role in securing this assurance, by doing our able best to stop mothers from dying.

Maternal mortality in this age and time is the biggest shame we obstetricians face, because with the right knowledge and timely intervention, in any given circumstance it is always avoidable. "No mother should die during birthing" should be our motto, as also "Good health for all mothers" to prevent maternal morbidity.

PIH or Pregnancy induced Hypertension with its various terminology changes over the past few years, has been affecting women since ages now. And our attempts to decipher its various clinical aspects have been like exploring the tip of the iceberg, because the basic problem has to be tackled by lifestyle education and other preventive measures. That said, it is essential to deal with the clinical aspects since that is how the patient presents to us.

This issue dealing with the various aspects of the clinical, preventive and research aspects of the condition, I am sure will highlight and answer a number of important related questions. I appreciate and applaud the efforts of the Safe Motherhood Committee of FOGSI and specially Dr. Sadhana Gupta in bringing out this issue.

Dr. Nandita Palshetkar
Senior Vice President 2011
Incharge - Safe Motherhood Committee

Dear Friends,

Please accept Season's Greetings!

At the onset I must congratulate safe motherhood committee and newly elected chairperson Dr. Sadhana Gupta for initiating work of committee. This idea of bulletin on various issues related to safe motherhood is praiseworthy.

Hypertensive disorders is always an enigma for clinicians because of its bizarre presentation and course of disease..

In my own clinical practice, I have observed its impact very closely over last 20 years especially while dealing with cases of PIH from the underprivileged, illiterate and poverty spectrum women.

The deliberations in this bulletin will be useful to all clinicians and postgraduates.

I wish every success and all the best to the committee and this bulletin.

With Regards & Best Wishes,

Dr. Milind Shah
Vice President FOGSI 2011
Chairman - Rural Obstetrics Committee of FOGSI (2004-08)

Dear FOGSI members and dear friends,

It is a moment of great pride and privilege, while I present the first issue of safe mother hood bulletin before you. The idea of publishing this sort of bulletin used to flash my mind and heart since a long time, while traveling in different part of country I met so many dedicated doctors working hard for the patients in very difficult situations.

The irony of present time is that despite having great scientific knowledge and very sophisticated techniques, we are unable to follow simple rules and teachings and to reach the great proportion of needy persons. It is a humble attempt to spread the light of knowledge to maximum number of doctors and finally to patients and also highlight our own geographical, social, logistic, administrative problems and means to improvise ourselves.

This magazine will be published thrice in a year each issue will take up on specific theme of major health problem in obstetrics. This issue is focused on **Pregnancy Induced Hypertension and it's complications**, which is affecting 10-15 % of pregnant women. And can result in life threatening complications. I am grateful to all the contributors for their articles, quiz and sharing of their valued experience on this very important condition which presents in many ways. Close monitoring of maternal and fetal status, judicious and timely intervention with antihypertensive drugs and Magnesium Sulphate, and timely termination of pregnancy gives the optimum results. I believe that all the articles will help you a lot in better understanding of subject and managing your patients.

Beside special theme, we plan to have regular columns—**India Speaks, Projects**, in which difficulties in particular areas to work, or specific work and projects taken up by members or organization will be highlighted. In this issue problem in Bundelkhand region affecting women's health and Manthan project gives you insight of our country.

Of course work done by different members and coordinators of our committee will also be shared in this magazine. Data collection on SAMM, various workshops, CMEs and field work are included in it.

I remember and recite the great words of **Gurudev Rabindranath Tagore** with all of you ,which echoes our aims and hopes.

Sincerely yours,

Dr Sadhana Gupta
Chairperson - Safe Motherhood Committee

Where the mind is without fear,

And the head is held high,

Where knowledge is free;

where the world has not been broken up

Into fragments by narrow domestic walls;

where word comes out from the depth of truth;

Where tireless strings stretches it's arms towards perfection;

Where the clear streams of reason has not lost it's ways

into the dreary desert sand of dead habit

Where the mind is led forward by thee,

into ever widening thoughts and actions

Into that heaven of freedom, my Father,

Let my country awake.

PIH : THE CHALLENGE

Dr. Milind R. Shah
MD, DGO, DFP
Vice President FOGSI (2011)
Chairman - Rural Obstetrics Committee of FOGSI (2004-08)
President - Solapur OBGY Society (2001-2002)
FOGSI Representative-Solapur OBGY Society
Executive Committee Member- ISOPARB, IAGE, ISPAT
Steering Committee Member - Asia Safe Abortion Partnership

Pre-eclampsia has been a recognized pathological entity since the time of Hippocrates and ancient Greeks.[1] After the invention of sphygmomanometer in 1896; arterial hypertension during pregnancy was recognized as part of eclampsia or pregnancy toxaemia. Many disorders associated with pregnancy are toxaemic in nature but the term toxaemia is used to include pre-eclampsia, imminent eclampsia and eclampsia. Now a day this term is not used, as triad of hypertension, proteinuria and edema can be present in some other disorders as well. On the other hand there are many cases of hypertension without edema or proteinuria but of much clinical significance.

Hypertensive disorders in pregnancy is one of the major cause of maternal and perinatal mortality and morbidity. It is one of the commonest medical disorder diagnosed by obstetricians in clinical practice.[2] Approximately 1,00,000 women die worldwide per annum because of eclampsia.[3] It is said that pre-eclampsia and eclampsia contribute to death of a woman every 3 minutes worldwide.[4] Majority of these conditions are preventable. Good antenatal supervision followed by appropriate treatment will definitely helps mother and baby for good outcome. It has been observed that though it has much significance for maternal health it is at backyard as compared to haemorrhagic complications of pregnancy.

Though there are many terminologies and classifications used for cases of pregnancy with hypertension, Williams classification[5] appears most practical which is

I. Pregnancy Induced Hypertension
   A. Without proteinuria or edema
   B. With proteinuria or edema (Pre-eclampsia) – Mild or Severe
   C. Eclampsia
II. Chronic Hypertension
III. Pregnancy Aggravated Hypertension

It is important to diagnose hypertension or PIH accurately. The blood pressure 140/90 or greater or there has been an increase of 30 mm Hg systolic or 15 mm of diastolic over baseline values on at least two occasions 6 or more hours apart is gold standard. Korotkoff V is accurate for measurement of diastolic blood pressure as this corresponds more closely to the intra-arterial pressure and is the most reproducible endpoint in pregnancy.[8] Though we say preeclampsia is a triad of hypertension, edema and proteinuria, it is a common conclusion that these two parameters are variable. Edema could be gestational edema, which ameliorates after lying down. There are many studies, which have observed convulsions before onset of proteinuria. Edema need to be nondependent and usually involves face and hands as against in gestational edema, which appears more on feet. Proteinuria should be taken as worsening sign of hypertensive disease and there is direct proportion of proteinuria to maternal and perinatal mortality and morbidity.

Incidence & Etiology

Overall incidence of PIH is said to be 6-8%[9] but it varies a lot in different parts of world and also has many other factors associated with it.

- Parity: more common in nullipara
- Age: extremes of age
- Race: more in black women than white women
- Familial tendency: there is familial predisposition Genetics : It is said that maternal genotype is responsible for conveying a susceptibility to developing pre-eclampsia.[10]

Safe Motherhood Initiative at Door Step of every Women

Member societies of FOGSI are taking initiative to reach the unreached people by organizing Health & Anemia Detection Camp for rural and urban underprivileged area. We need more and more such effort to reduce maternal morbidity and mortality in our country.

- Antenatal care: It definitely has association. It helps to locate many revealed cases at rural areas and as it is preventable also reduces incidence in population receiving antenatal care.
- Multiple pregnancy or Hydatiform mole or Fetal hydrops (Intra-abdominal mechanical factors)
- Under nutrition or over nutrition, particularly dietic deficiencies of calcium, vitamin B and D or other minerals
- Chronic vascular or renal disease
- Diabetes
- History of hypertensive disorder in previous pregnancy: 20-50% women had recurrence in their subsequent pregnancies.[11]
- Immunological causes

Early Diagnosis & Prevention

As symptoms appear late it is signs, which need to be carefully elicited by clinician or health care provider. It is possible to detect cases early if we observe standard schedule of antenatal examination that is monthly till seventh month, fortnightly afterwards and weekly in ninth month. Meticulous and accurate blood pressure recording and weight measurement would be of great help. Upward trend in diastolic pressure though in normal range could be clue for diagnosis or at least alarm for close vigilance.

Single elevated blood pressure needs to be confirmed, preferably average of 4-5 readings before it is used in management decisions.[12] Similarly care need to be taken while using automatic blood pressure recorders as diastolic blood pressure recorded on these machines could be several mm of Hg lower than normal.[13]

Similarly proteinuria needs to be tested by heating urine in a test tube. Urine stick testing may overestimate presence of proteinuria. It is better to confirm by a 24 hours collection for quantification.[14]

Many substances have been tried for prevention. Many small trials reported significant reduction in the incidence of preeclampsia in high-risk populations. However, Collaborative low dose aspirin study in pregnancy (CLASP),[15] a large randomized study could not found reduction in incidence. Similarly calcium is essential in the synthesis of nitric acid, a potent vasodilator believed to contribute to the maintenance of reduced vascular tone in pregnancy. Many small trials found benefit of calcium supplementation in prevention of pre-eclampsia, but large trial of Levin reported no benefit.[16]

Prediction of PIH

Predicting PIH and treating the condition early will no doubt reduce the maternal as well as perinatal mortality and morbidity. For this various tests have been proposed. Following are some common tests used for prediction of PIH.

1. Roll over test
2. Angiotensin II infusion test
3. Hand grip test
4. Radio immunoassay
5. Serum uric acid
6. Calcium/creatinine ratio (CCR)
7. Maternal plasma endothelium I level
8. Doppler flow velocimetry
9. Ultrasonic scan with Doppler.[17]
10. Fibronectin level
11. Beta human chorionic gonadotrophin and human placental lactogen.[18]
12. Maternal serum inhibin A[19]

Over 160 substances have been shown to be increased in women with pre-eclampsia but all these studies are conflicting.

Management

Aims in management are

1. Control of hypertension
2. Prevention of eclampsia
3. Prevention of accidental hemorrhage and DIC
4. Prevention of renal damage
5. Maintenance of placental perfusion
6. Monitoring fetal growth and fetal well being
7. Planning timely delivery

SAFE MOTHERHOOD INITIATIVE : ToT Workshop at India Habitate Centre, New Delhi

ToT Workshop at India Habitate Centre, New Delhi on 15th May 2011 on Maternal Mortality **with a goal for reduce MMR from 300 – 30, attended by 60 participants from all over the country.**

The famous quote by Pritchard (1978) " In some mysterious way the presence of chorionic villi in certain women incites vasospasm and hypertension. Moreover, to effect a cure the chorionic villi must be expelled or surgically removed."[26] In one of the interesting study published recently it has been observed that immediate postpartum curettage is a safe and effective procedure which could accelerate recovery from eclampsia and reduces the severity of complications.[27] It is necessary to assess risk benefit ratio for this procedure considering surgical and anesthetic complications immediate postpartum in case of eclampsia. But could be promising for unregistered cases from rural area.

Maternal sequelae of severe hypertension in pregnancy[28]

As we know it is one of the important health hazard in woman's reproductive span. This is mainly because of mortality and morbidity associated with it which could be

1. Cerebral vascular accident
2. Haemolysis elevated liver enzymes and low platelets (HELLP)
3. Convulsions
4. Occipital lobe blindness
5. Pulmonary oedema
6. Aspiration syndrome
7. Abruptio placentae
8. Post partem haemorrhage
9. Renal failure
10. Liver failure and liver rupture
11. Deep venous thrombosis
12. Complications of treatment like overdose of sedation, aspiration, fluid overload
13. Complications of caesarean section
14. Fetal complications like IUGR, fetal distress and fetal death
15. Sometimes women may get rare complications like massive ascites, which needs intervention like termination, as it cannot be cured by medical treatment. Incidence of it is 21.6/1000 in severe PIH[29] and probable mechanism include renal retention of sodium and fluid resulting in expansion of interstitial compartment.[30]

Follow up

It is necessary to follow these cases regularly. We normally expect that blood pressure return to normal in 6 weeks. If not so it is necessary to investigate her for any other underlying causes.

It is always better to explain her and also to all relatives about all happenings specially in cases of eclampsia. In country like India specially in rural areas, many times husband appear in picture quite late as women come for delivery to their mother's place. He need to explained about pre-eclampsia as it can happen in next pregnancies. It has been seen in 20-50% cases there is recurrence.[31]

Future

There is definite need for more prospective randomized controlled multicenter trials with sufficient sample size to assess the efficacy of commonly indicated drugs or even changes in dosage of various drugs considering seriousness of this life threatening disease. It is also necessary to have a long term follow up of children who underwent trial during their intrauterine life.

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Jhansi :

16th July, Maternal Mortality Workshop attended by 70 participants, which included 15 doctors working in rural area in PHC. Principal M L B Medical College was patron of workshop and assured full support for Safe Motherhood initiative Dr. Hema Shobhane and Dr. Alka Shetty were key organizer.

Sagar :

17th July, Workshop on Maternal Mortality attended by 40 participants. Anesthetists were also attended. All members participated with full enthusiasm in drill and interaction session.

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Azamgarh :

Organized at Azamgarh Society focused on proper management of Anemia with special emphasis on I/v Iron Sucrose. It was attended by 60 participants, chief guest were IMA President Azamgarh Branch.

Bilaspur :

At Bilaspur on 12th February 2011. Dr Sarita Agrawal and Dr Rashmi Singh were key persons. APH and Obstetric Sepsis were highly appreciated in symposium.

PREDICTION AND PREVENTION OF PIH

Dr. Laxmi Shrikhande
Director - Shrikhande Test Tube Baby & Laparoscopy Centre,
Nagpur

Dr. Sangeeta Tajpuriya
Consultant Gynecologist & Infertility specialist
Nagpur

Introduction

PIH is an appropriate disease to screen as:

1. It is common, important.
2. Significant risk to occur.
3. Significant maternal and perinatal mortality
4. Prediction of the disease is beneficial.

However, although numerous screening tests for PIH have been proposed over the past few decades, no test has so far been shown to be a perfect screening test. One of the problems in any review concerning PIH is that unknown etiology of hypertensive diseases of pregnancy has led to clinical signs such as hypertension and protienuria not merely diagnosing disease, but defining it. For a screening test to be of value, prophylactic measures must be effective, but it is still not available for PIH, various medications are under study.

Prediction of PIH

A myriad of potential screening tests have been advocated, in keeping with the legion of possible aetiologies that have been proposed for PIH **'the disease of theories'** over 70 years ago.

1. Abnormal endovascular trophoblast invasion of the uterine spiral arteries.
2. Widespread disturbance of the maternal vascular endothelium.
3. Genetic influences.
4. Abnormal lipid metabolism.
5. Nutritional deficiencies.

Battery of tests

Family history* Second trimester MAP>- 90mm HgAngiotensin sensitivity testRoll over testUterine artery Doppler *Urinary calciumUK to Cr ratio*Serum AFP/ßhCGPlasma fibronectin*Serum Inhibin*Serum UrateHematocritAntithrombin IIIPlasminogen activator inhibitors (1 & 2)

*Tests which appear to have the best predictive value

Family history

Clinical history is the simplest test. There is 25% risk of preeclampsia to recur in subsequent pregnancy. The relative risk (RR) for PIH in a first pregnancy is 7-10. For daughters of women with PIH it is 4, for sisters of women with PIH it is 7 and for women with CHT it is 3-7.

Mid-trimester blood pressure

Blood pressure normally falls at the beginning of pregnancy and reaches its lowest level in the second trimester.[1]

$$\text{Mean arterial pressure (MAP)} = \frac{\text{Systolic pressure} + (\text{diastolic pressure} \times 2)}{3}$$

There was a steady progression in the incidence of PIH (defined as a MAP>110 mm Hg) with each 5mm Hg increment in mid trimester MAP. A mid-trimester MAP > 90 mm Hg increased the risk of developing PIH by over fourfold & of developing pre –eclampsia by over threefold.[2] However, when used as the sole screening criterion, mid-trimester BP recordings select less than half of the women who develop PIH, and less than one third of those selected subsequently develop PIH.

Gant's Roll over test

Gant et al[3] reported that when a woman is turned from the left lateral to the supine position, if there is an increase in the diastolic blood pressure of 20 mm or more, it predicted the development of subsequent hypertension in 15 out of 16 women tested between 28 & 32 weeks gestation. Dekker et al[4] found a false – positive rate of 67% and they concluded that the roll – over test was of no value in the prediction of PIH.

Gwalior :

27th August, Workshop attended by 60 participants. Dr. Ratna Kaul and Dr. Charu Mittal were key organizer. Dr. Roza Olyai, Chairperson Adolescent Health Committee chaired the session and conducted the session very well.

Bhopal :

28th August, Workshop on Maternal Mortality attended by 75 participants including doctor from adjoining areas like Hoshangabad, Vidisha and Govt. Hospitals. Many members gave suggestion to reduce MMR in Madhyapradesh. Dr. Archana Tripathi was key organizer.

Several Flaws of the Test

1. Some women have unusually low diastolic blood pressures in the left lateral position (<45 mm Hg); which leads to false positive result when the value is compared with the reading in the supine position.[5]
2. An artefactual rise in diastolic pressure might be expected when the patient rolls from the left lateral to supine position, as the position of the sphygmomanometer cuff relative to the heart will be altered.[4]
3. Markedly differing results from the same patient are found when the test is performed on a biweekly basis.[5]

Despite being simple non invasive test, it has rightly found little place in routine obstetrics practice.

Angiotensin sensitivity test

It is based upon the fact that women destined to develop pre-eclampsia lose their refractoriness to Angiotensin between 28-32 weeks of gestation. If a pressor response occurs with <8ng/kg/min of infused Angiotensin, 90% are likely to develop pre-eclampsia[6] The main problem with this test is that it is invasive.

Doppler Ultrasound

In the non-pregnant state there is reduced diastolic flow and notching of the uterine arteries. In normal pregnancies due to the trophoblastic invasion, this notch disappears and the flow increases. If there is persistence of a diastolic notch in the uterine artery at 18 -20 wks, it indicates that the second wave of trophoblastic invasion has not occurred and is predictive of pre-eclampsia and IUGR.[7] However, the RR for PE has varied from 3 to 27.

Urinary Assays

Microalbuminuria, urinary calcium and urine kallikerin to creatinine ratio are relatively simple tests that have been used for screening in the second trimester.

Different authors have varying results with microalbuminuria by radioimmunoassay as screening test for PIH; hence need greater evaluation before it can be used as a screening test.

24 hour urinary calcium excretion as a screening test requires more studies before accepting it for general population.[8]

A large longitudinal study of 305 patients of mixed parity, by Millar et al[9] demonstrated that measurement of urinary kallikrein to creatinine ratio in a random urine sample collected at the booking visit (16-20 weeks gestation) could be used to predict patients at risk of developing PIH with a false- negative rate of less than 10% and a false positive rate of less than 50%.

Hand-grip test

Initial blood pressure is recorded repeatedly till we get a constant diastolic blood pressure reading, than the subject is asked to compress the inflated BP cuff for 3 min period & than at 50% of maximal voluntary contraction. A 20 mm of increase in diastolic blood pressure is positive test (false negative and false positive rates of 4% and 19% respectively) much better than roll over test, but needs further evaluation as PIH is not mediated by sympathetic activity.

Second Trimester Maternal Serum Markers (AFP, β HCG, Inhibin A) and Lipid profile as predictors

Trophoblastic dysfunction thought to be primary problem in PE, its serum markers can be used as screening test like: increased levels of ^{2} HCG, inhibin, AFP.

A significant positive correlation between second trimester serum markers and development of preeclampsia was observed ($p<0.001$).

Maternal dyslipidemia and elevated maternal serum ßhCG at second trimester are very good non-invasive predictors of PIH. However, dyslipidemia seems to be a more efficient marker in predicting PIH at early second trimester.

Platelet AII binding assay

Measurement of platelet AII binding , is relatively straight forward assay & can be perform using single venous sample of 20 ml. Platelet AII binding reflects vascular smooth muscle reactivity. Study conducted on primigravidas between 28- 32 wks showed platelet AII binding in the subjects who subsequently develop PIH was significantly higher as compare to those who remain normotensive.[10] Predictive accuracy of this test can be increased by serial estimations. Its result is comparable to A II sensitivity test, but superior to it as it is non-invasive. Once characterization of platelet AII binding site is achieved, only a single assay will be cost effective & reliable predictive screening test.

Rural Health Checkup Camp

Gorakhpur & Siddharthnagar regular health checkup camp are being organized in different remote villages with doctors working in PHC with detection of Anemia & distribution of medicine.

Prevention of PIH

These strategies involve manipulation of diet and pharmacological attempts to modify the pathophysiological mechanisms thought to play a role in the development of preeclampsia.

Interventions used to prevent PIH

Aspirin Calcium Magnesium Fish oils Dipyrimadole Antihypertensives drugs

Aspirin

Platelet cyclo-oxygenase is more sensitive to inhibition by low dose of aspirin (<100 mg) than endothelial cyclo-oxygenase and therefore treatment increases the prostacyclin to thrombaxane ratio.[11]Most clinicians continue to use aspirin from 12 weeks of pregnancy in women at risk of early onset PIH, i.e. those with CHT requiring treatment, renal disease and women with early onset PIH in a previous pregnancy.

Calcium Supplementation

It is known that the incidence of PIH is lower in populations with a diet high in calcium. Levine and co-workers[12] conducted a double blind randomized trial in which 4589 healthy nulliparous women were randomly administered either 2 g per day of supplemental calcium or placebo. Supplemental calcium did not prevent any of the hypertensive disorders due to pregnancy.

Fish oils

Marine n-3 fatty acids are known to reduce the formation of thrombaxane A2 with little or no effect on prostacyclin. Four to nine capsules containing fish oil was administered each day, but fish oil was ineffective in this study of 1474 pregnancies conducted at 19 hospitals in Europe.[13]

Antioxidants

The rationale is that antioxidants act as scavengers of free oxygen radicals, which cause pre-eclampsia by oxidative stress and lipid per oxidation.[14] Vitamin C 1000mg/day and Vitamin E 400IU/day have been suggested for prophylaxis in a high risk population, but not proved to be of benefit. Lycopene is another antioxidant suggested.

Folic acid

Hyperhomocystinaemia is also found to have an association with early onset pre-eclampsia. Folic acid has been shown to reduce the homocysteine levels.

Conclusion

Need of the hour is to do more research for better understanding of basic pathophysiology of development of PIH and PE, so that we will come out with the ideal predictive test and also lead us in the correct direction to find out prophylaxis for prevention of PIH and PE, a dreaded complication of pregnancy amounting for significant maternal and perinatal morbidity as well as mortality.

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Rural Health Checkup Camp

Jhansi Society organised a large rural area camp along with IMA members, there was 150 people had full health checkup and Family Planning Counseling.

ANTIHYPERTENSIVE DRUGS IN MANAGEMENT OF PIH

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Introduction

Hypertension disorders and their complications are the leading cause of maternal and perinatal mortality and morbidity worldwide. In India, eclampsia has been reported to have a maternal mortality of 12. The perinatal mortality rate in severe pre-eclampsia was 4.76%.

Aims of Management

The aims of management of hypertensive disorders of pregnancy are to control hypertension, look for maternal and fetal complications and treat them, take the pregnancy up to term if possible ensure a safe delivery for both the mother and fetus.

Antihypertensives

Antihypertensive therapy is used to protect the mother from effects of severe hypertension such as cerebrovascular hemorrhage, cardiac failure, abruption and eclampsia. The value of antihypertensive in mild to moderate disease (diastolic BP 90 to 109 mm Hg) in unclear. Various researchers have used antihypertensive drugs for mild hypertension. Unfortunately drug treatment for mild preeclampsia has been disappointing as shown by the Cochrane review which concluded that treatment induced decreases in blood pressure may adversely affect fetal growth. Thus though the risk benefit profile in mild to moderate disease needs to be re-examined, ACOG recommends antihypertensives when diastolic blood pressure is 105-11- mm Hg or higher although many clinicians start antihypertensives at diastolic blood pressure of 100 or higher.

On the other hand there is consensus that antihypertensives should be prescribed when systolic blood pressure is $\geq$ 160 mm Hg or diastolic blood pressure is $\geq$ 110 mm Hg with the aim to keep the blood pressure below the severe range (systolic blood pressure at 130-150 mm Hg and diastolic blood pressure 80-100 mm Hg) or mean arterial pressure less than 125 mm Hg as the maternal risk decreases with anti-hypertensive therapy. A step-wise approach to the use of antihypertensive is required.

- First line is either methyldopa or labetalol
- Second line is usually nifedipine
- Third line is methyldopa or adenoreceptor antagonist depending on which of these agents was used as first line therapy.

A suitable regime is labetalol 200 mg twice daily, increasing to 300mg four times daily as required. If blood pressure is not controlled then nifedipine is added. Such therapy is usually sufficient; if blood pressure is not adequately controlled on this combination, the disease is usually sufficiently advanced to warrant delivery. However, occasionally a third line agent is required and in this situation methyldopa is added at a dose of 0.25 gm two to three times daily increasing upto 500 mg four times a day. Where an adrenoceptor antagonist is contraindicated, methyldopa is used as first line therapy. ACE inhibitors must not be used antenatally especially during second and third trimester. Reported complications with ACE inhibitors include oligohydramnios, fetal growth restriction, bony malformations, limb contractures, persistent PDA, pulmonary hypoplasia, respiratory distress syndrome, prolonged neonatal hypertension and neonatal death.

Table 1: Antihypertensive drugs used for long-term nonemergency oral treatment

BP Medication	Dosage	MAX dose	Benefits	Adverse effects
Methyldopa (α, – Adrenergic agonists- central inhibition of sympathetic drive)	250-500 mg po q6-12h	4 g/24h	Proven to be safe, and efficacious; decreased second-trimester fetal losses	Maternal fatigue, depression orthostatic hypotension, xerostomia, elevated liver enzymes(5-10%)
Nifedipine (Calcium channel blocker-inhibits extracellular calcium influx into cells through slow calcium channels)	10-20 mg oral q4-6 hour	240 mg/ 24h	Effective for refractory HTN; Potent tocolysis in preterm labor; lowers BP without effects on blood flow in the umbilical artery	Maternal side effects-flushing headache palpitations; interaction with magnesium-sulfate: profound hypotension; no increase risk of congenital malformations
Labetalol (α and β blocker-reduction in cardiac output)	100 mg po bid	2400 mg/ 24 hour	Effective BP control; lowers BP without altering cerebral autoregulation; lower risk of arrhythmia than with vasodilatory agents	Fetal bradycardia, neonatal hypoglycemia, impaired fetal response to hypoxia, decrease uteroplacental flow; avoid in patients with asthma and CHF

Treatment of Acute Severe Hypertension

The objective of treating acute severe hypertension is to prevent potential cerebrovascular and cardiovascular complications such as encephalopathy, hemorrhage and congestive heart failure. Antihypertensive therapy is recommended by some for sustained systolic BP values of at least 180 mm Hg and for sustained diastolic values of at least 110 mm Hg.

Table 2: Treatment of acute severe hypertension

Medication	Onset of action	Dosage	Adverse effect
Labetalol	5 min	20 mg ivf bolus then 40 mg after 10 min, then 80 mg every 10 min upto a maximum total dose of 220 mg, a continuous infusion of 1-2 mg/min may also be used.	See table 1
Nifedipine	10 min	10 mg po can be repeated in 30 min, then 10-20 mg q4-6h with a maximum dose of 240 mg/24 hours.	See Table 1
Nitroglycerine		Initial infusion rate of 10 mg/min and titrated to the desired pressure by doubling the dose very five minutes.	Methemoglobinemia may result from high dose (>7 mg/kg/min) iv infusion
Hydralazine	10-20 min	5-10 mg iv every 15-20 min until a desired response is obtained.	Profound maternal hypotension and oliguria, fetal distress; Maternal pyridoxine-responsive polyneuropathy and drug- induced lupus, neonatal thrombocytopenia and lupus
Sodium nitroprusside	0.5 to 5 min	0.2-5μg/kg/min infusion; for use in refractory hypertension.	Fetal cyanide and thiocyanate toxicity

The blood pressure and pulse rate should be monitored every 5 min and the goal of therapy is to decrease the diastolic BP to 90-100 mm Hg.

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ECLAMPSIA REGISTRY AND INDIAN SCENARIO

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The National Eclampsia Registry was started as an ambitious endeavour to curb the menace of pregnancy hypertension ending into eclampsia. We all are well aware that the large numbers of eclampsia in India are a reflection of ignorance, economy and social situations which would need a huge churning at a very high level and through all the components of the healthcare. But we at the level of FOGSI and its members can definitely make a differenceby actively contributing to the registry.

The vision for the National Eclampsia Registry is to quantify the disease, evaluate treatment practices and achieve standardization. This process should be such that collective action can be acutely directed towards reduction of eclampsia – related maternal mortality and morbidity. It encompasses all from urban high-end health facilities to grass root care providers. While the path is still long and winding, awareness about the registry has spread and efforts to participate have made considerable impact.

The registry has made commendable progress since its inception. It has progressed from being in paper based format to web-based data collection. Medical professionals working individually or belonging to various organizations working in obstetrics and gynecology can now go to www.abcofobg.com/ eclampsia and follow the simple instructions to register themselves and enter data directly to the website. Currently there are over 1000 cases registered under various degrees of PIH.

There are some very valuable revelations from the currently received data. The incidence is high but also there is definitely an improvement in the care provided by the members. Use of Magnesium sulphate has improved and also early intervention by cesarean sections confirms the safety of CS which was difficult in such situations in the past .Identification of risk and referral to HDUs also is widely understood and therefore we need to continue this effort to help elevate the standards of care and safety for our patients

Preeclampsia and eclampsia are obstetric diseases, and obstetricians are the group best equipped to diagnose, evaluate and manage them. Today as a clinician however we need to tackle what we have from the experiences gathered and try to deliver the best to our patients .We should not falter there and should try to deliver the best .From making the diagnosis to treating atypical eclampsia, management of preeclampsia involves serious , often unpredictable challenges. In this article, we highlight several challenges that obstetricians face when managing preeclampsia and eclampsia, and offer useful strategies to help minimize morbidity and mortality in both mother and infant.

Although severe preeclampsia represents only a fraction of those amounts, and eclampsia an even lower percentage, they are potentially catastrophic complications of pregnancy and one of the leading causes of maternal death. They also are responsible for a large percentage of infants born prematurely as a result of a worsening maternal or fetal condition.

The National Eclampsia Registry interim statistics reveals that the incidence of hypertensive diseases during pregnancy to be quite high with quite a substantial incidence of eclampsia. These are actually cases reported by the FOGSI members. There can be quite some more which are being treated by peripheral health workers and the incidence can actually be higher .What we know for sure is 1in 10 pregnancies are complicated by PIH and therefore we need to have a high index of suspicion .

- By definition Eclampsia is defined as the occurrence of one or more convulsions superimposed on pre-eclampsia.
- Preeclampsia is pregnancy-induced hypertension in association with proteinuria (> 0.3 g in 24 hours) ± edema and virtually any organ system may be affected

We also know that there are four major types of hypertensive disorders during pregnancy. And we need to classify them .It is important that we do so as that helps in better prognostication and treatment planning.

1. Chronic hypertension
2. Preeclampsia eclampsia syndrome
3. Superimposed preeclampsia
4. Gestational hypertension

Attempts should be made to establish these diagnoses antenatally, intranatally, postnatally and in subsequent pregnancy

Optimum antenatal care is a must

Early and adequate prenatal care cannot me more emphasized ! Although the diagnostic criteria for preeclampsia have been widely established – persistent BP elevation above 140/90mmHg and proteinuria exceeding 300mg over a 24hr collection period- the condition does not always play by the rules. With close monitoring of weight, urine protein, and BP, the clinician can identify and follow the patient and detect a condition much early

Risk Factors for Preeclampsia

- Chronic hypertension
- Chronic renal disease
- Connective tissue disease
- Current foetal growth restriction
- Gestational hypertension in the current pregnancy
- History of prior preeclampsia
- Insulin dependent diabetes
- Multiple gestation
- Nulliparity
- Obesity
- Thrombophilia.

It is important to diagnose it early :

Early identification of preeclampsia may allow for interventions, including delivery, that will lessen the risk of progression to severe preeclampsia and eclampsia and reduce foetal and maternal morbidity and mortality. It is, therefore, essential for the clinician to ask specifically about signs and symptoms of preeclampsia and to listen carefully to the answers.

Signs and symptoms may sometimes be typical:

- Weight gain
- Increasing edema
- Persistent headache
- Blurred vision
- Malaise
- Nausea
- Epigastric discomfort
- Right upper quadrant discomfort.

Although a number of tests have been proposed to predict who may be at greatest risk for preeclampsia, none have risen to the level that they can be recommended for general population screening.

Diagnostic criteria

The diagnosis of preeclampsia is based on persistent BP elevation above 140/90mmHg and proteinuria exceeding 300mg over a 24-hour collection period. Other criteria have been applied, such as rise in systolic or diastolic BP above baseline and urine dipstick criteria for proteinuria, but BP above 140/90mmHg and proteinuria above 300mg are most frequently used in medical centres Gestational hypertension and chronic hypertension do sometimes coexist with superimposed preeclampsia, but should not be confused with preeclampsia or lead to management decisions that should apply only to patients with preeclampsia.

Before severe preeclampsia can be diagnosed, the initial criteria for preeclampsia should have been fulfilled, along with one or more of the findings listed below:

- Persistent blood pressure above 160/110mmHg
- Proteinuria
- Refractory oliguria (<500cc over 24 hours)
- Renal failure (minimal criterion would be a rise in serum creatinine of 1mg/dl above baseline)
- Persistent right upper quadrant or epigastric pain or both
- Persistent headache

- Scotomata/blurred vision
- Shortness of breath with reduced oxygen saturation or pulmonary edema
- Thrombocytopenia (platelets <100,000/cu.mm)
- Hemolysis (based on peripheral smear analysis or increased Bilirubin)
- Impaired liver function of unclear etiology
- Eclampsia
- Estimated foetal weight below 5th percentile for gestational age

Prediction

Attempts to predict preeclampsia have met with poor results. Measurement of the ratio of uterine artery systolic to diastolic flow has not been informative in the general healthy population of pregnant women. Nor has uric acid determination been useful; it generally has very poor predictive value and should be interpreted with caution.

When to hospitalize?

Mild preeclampsia can be managed expectantly until foetal maturity or 37weeks of gestation. But hospitalization can be offered in the Indian context. This offers an opportunity to investigate the patient properly ,monitor the urine output ,BP and the fetal condition through USG and Doppler if necessary. Also the patient can be offered dietary advice and the correct categorization after her BP has been monitored round the clock. But any serious presentations such as severe edema, ascites, high BP, severe proteinuria, headache, pain, sever IUGR, convulsions etc demand a hospital care.

Assessment

Initial evaluation consists of :

- Foetal non stress testing
- Amniotic fluid index
- Serial BP determination
- 24-hour urine collection (if dipstick proteinuria is negative)
- Initial laboratory evaluation comprising of a complete blood count with platelets and aspartate amino transferase (AST), alanine amino transferase (ALT), and creatinine levels and LDH levels

The tests should be directed to assess the maternal conditions as Preeclampsia is a multisystemicdisorder. Constant vigilance should be undertaken to prevent eclampsia as far as is possible and to diagnose HELLP early. There is a tendency to prolong the pregnancy as much as possible to be able to achieve salvagibility in the fetus. But one needs to weigh the risk to the mothers system such a prolongation could cause .Also LDH levels above 600 have proved to be a better parameter to guide a clinician regarding the presence of hemolysis. This can help one guide regarding the intervention and rising LDH levels would help this decision. While interpreting renal parameters in pregnancy one should muster care as these parameters are already reduced in a normal pregnancy due to increased GFR and hemodilution.

Additional tests may be ordered as indicated but are of limited value in making management decisions. If foetal and maternal evaluations are reassuring, and if the patient has remained stable, then outpatient management may be considered. In general, if proteinuria exceeds one gram in 24 hours, in-hospital management is recommended, regardless of other parameters.

Controlling blood pressure: Why? and How ?

Cerebrovascular accident(stroke) is the leading cause of maternal mortality from preeclampsia. Not all cases can be prevented, but one suggested preventive strategies is adequate BP control. Some cases of stroke in the setting of preeclampsia will occur despite systemic BP reading that are not considered to be in a dangerous range. One reason may be an override of normal cerebral blood flow auto regulation mechanisms, resulting in increased cerebral blood flow, rising cerebral perfusion pressures, and vessel rupture. Such occurrences may sometimes, but not always, be related to coagulopathy.

When a patient has elevated BP, generally defined as persistent systolic pressures above 160 to 170mmHg and persistent diastolic pressures above 105 to 110mmHg, antihypertensive therapy is indicated and should be administered in a timely fashion.

Labetalol, nifedepine have been used effectively in such acute settings, when administered parenterally (except nifedepine, which can be given orally and should never be given sublingually) and when given in proper dosage.

Pharmacotherapy of acute hypertension :

Drug	Dosage	Directions
Labetalol	10-20mgIV push	repeat every 10-20mins, doubling the dosage each time until a maximum total cumulative dosage of 300mg has been given.
Nifedipine	10mg	repeat in 20mins for four doses (maximum 40mg); then give 10-20 mg orally (never sublingually) every 4-6h to achieve a stable BP of 140-150/90-100mmHg.

Preventing seizures

Magnesium sulfate is the drug of choice to prevent both initial and recurrent eclamptic seizures. Two large clinical trials ended any doubts about its efficacy, demonstrating its superiority over both phenytoin and diazepam in the settings of preeclampsia and eclampsia.

Magnesium sulfate is best administered intravenously (IV) via continuous infusion pump. An initial bolus of 4-6gm is given over 15-30mins; this amount does not need be adjusted to the patient's level of renal function. A continuous infusion of magnesium sulfate is usually initiated at a rate of 2gm/hour. It is this infusion dosage that may need to be altered, based on the patients urine output and renal function.

Evidence of magnesium toxicity includes:

- Loss of deep tendon reflexes
- Respiratory depression
- Blurred vision
- Cardiotoxicity

Each of these toxicities can occur at ostensible therapeutic levels of serum magnesium, so there can be no substitute for the regular (atleast every 2hours) clinical assessment of the patient who is receiving a continuous infusion of magnesium sulfate.

There is no debate about the utility of magnesium sulfate in severe preeclampsia, but when it comes to intrapartum management of mild preeclampsia or cases in which preeclampsia first manifests in the post partum period, data are not so clear.

Treatment of magnesium toxicity

10% calcium gluconate(1g) is administered IV to reverse the effects of suspected magnesium toxicity.

In addition, because magnesium freely crosses the placenta, it is recommended that a new born resuscitation team be present at all deliveries during the mother was receiving magnesium sulfate because neonatal respiratory and cardiac depression have been reported in this setting.

Delivering the patient

Preeclampsia, severe preeclampsia, and eclampsia present a dilemma for the managing clinician: subject her to the rigors of labor, or to the heightened risk of cesarean delivery? Overall, a properly vaginal delivery is less hemodynamically stressful than cesarean delivery for the mother. To accomplish vaginal delivery, it is necessary to provide optimal anesthesia and analgesia.

Risks of regional anesthesia

Women who have preeclampsia are volume depleted. As such, they are prone to hypertension after administration of regional anesthesia if the block sets up too rapidly. For this reason, epidural anesthesia or some of the newer combined techniques offer optimal analgesia by allowing for slower implementation of the regional block.

Women who have preeclampsia, especially severe preeclampsia, are usually candidates for regional analgesia and anesthesia. Some requisites for regional anesthesia under these conditions include the following:

- The patient can tolerate preblock hydration
- She has adequate IV access
- There is reproducible means of determining BP
- The patient has a normal coagulation profile. (a normal platelet count with normal transaminase should be sufficient to confirm this; women who have preeclampsia are not at increased risk of having altered prothrombin time, partial thromboplastin time, or fibrinogen levels, provided there are no other mitigating clinician circumstances).
- The anesthesiology team is skilled in the administration of regional anesthesia.

If eclampsia occurs

Do not proceed to emergent cesaerean section. Rather,

stabilize the mother, protect her from injury during the seizure, protect her airway, and allow the seizure to take its course.

Begin magnesium at once. If it was being infused before the seizure, consider giving an additional 2g bolus over several minutes. As the mother stabilizes, the foetal heart rate will recover and she can be reassessed to determine optimal timing and route of delivery.

In case of fetal compromise cesarean section may be a better choice than a vaginal delivery

Practice AMTSL

Whether a vaginal delivery or a CS active management with oxytocic should be practiced to prevent PPH .It is safe to use Oxytocin 5 U bolus equally diluted over 2-3 minutes or prostaglandin injections. PG can be used also as misoprostol sublingually or transvaginally. Due to hemoconcentration even average loss may not be well tolerated by these patients .Also hypertension , use of magnesium sulfate and endothelial dysfunction can contribute to more blood loss which maynot be well compensated and tolerated by these patients. All attempts to reduce blood loss should be undertaken .The fluids used should be liberal but judicious .recommendation is 80 ml /kg/hr as over infusion can cause pulmonary edema very fast in these women.

Post delivery management

It involves close vigilance for eclampsia, PPH, HELLP, Pulmonary edema and thromboembolic complications. Delivery of the baby is the treatment but the 72 hours post delivery are an important period when hemodynamic transition is occurring in the mother which need close observation and early detection of eclampsia. The NER data has shown a high index of postpartum eclampsia and it has to be remembered that such an occurrence leading to morbidity has to be avoided by all means

Post partum care

Every patient of preeclampsia should be monitored closely for 6 weeks with proper advice regarding the use of antihypertensives and should report at regular intervals .They should be guided and encouraged to use contraception atleast for a period of 2-3 years. The preferred method would be an IUCD . They should be counseled regarding the importance of prenatal checkup counseling and the necessary care periconceptionally in the subsequent pregnancy.

NER : The crusade is on....

Under the aegis of the registry 26 critical care in Obstetrics and Eclamspia workshops were conducted all across the country. These workshops were very well appreciated and helped reach out with evidence based knowledge to the members. It was observed that at some places there is a lot of reservation in using magnesium Sulphate and ignorance about the correct use of antihyperstensives exists and so also the further management. On the other side there are some places viz Bellary where the society has taken up the endeavor of completely eradicating eclampsia and they have undertaken training workshops for medical officers and sisters which has shown remarkable results .Every society of FOGSI should undertake this as a role model and an inspiration of organizing meetings for referring practitioners and empowering them with the knowledge of using Depin and magnesiumsulphate to stabilize the patient and then shift for better care.

Time and again it has become overt that antenatal care of deliverd in its right perspective will make a lot of difference to the current Indian situation. A gynecologist maynot be able to reach out to all .but can definitely help the society by imparting training and increasing awareness of those aroind who act as first contact physicians . Imagine if each one of the members decides to adopt his own area for the purpose and offers training and guidance we will be able to go a long way in reducing maternal morbidity as well as mortality. Also is important to follow standards of protocol in our patiens and facilities. Intense knowledge and compassionate iterventions will go along way in helping us in reducing maternal deaths.

Take home message

Early identification

Close antenatal supervision

Risktagging and planning safe confinement in a tertiaty care centre

Early referral if necessary

Magnesium sulphate to all women with pregnancyhypertension

Prevention and early detaction of complications

HELLP SYNDROME : RECOGNITION AND MANAGEMENT

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HELLP, a syndrome characterized by hemolysis, elevated liver enzyme levels and a low platelet count, is an obstetric complication that is frequently misdiagnosed at initial presentation. Many investigators consider the syndrome to be a variant of preeclampsia, but it may be a separate entity. The pathogenesis of HELLP syndrome remains unclear. Early diagnosis is critical because the morbidity and mortality rates associated with the syndrome have been reported to be as high as 25 percent. Platelet count appears to be the most reliable indicator of the presence of HELLP syndrome. The D-dimer test may be a useful tool for the early identification of patients with preeclampsia who may develop severe HELLP syndrome. The mainstay of therapy is supportive management, including seizure prophylaxis and blood pressure control in patients with hypertension. Women remote from term should be considered for conservative management, whereas those at term should be delivered. Some patients require transfusion of blood products, and most benefit from corticosteroid therapy Epidemiology and Risk Factors

HELLP syndrome occurs in approximately 0.2 to 0.6 percent of all pregnancies.[1] In comparison, preeclampsia occurs in 5 to 7 percent of pregnancies. Superimposed HELLP syndrome develops in 4 to 12 percent of women with preeclampsia or eclampsia.When preeclampsia is not present, diagnosis of the syndrome is often delayed.

The risk factors for HELLP syndrome differ from those associated with preeclampsia. The syndrome generally presents in the third trimester of pregnancy, although it occurs at less than 27 weeks of gestation in an estimated 11 percent of patients. The syndrome presents antepartum in 69 percent of patients and postpartum in 31 percent of patients. With postpartum presentation, the onset is typically within the first 48 hours after delivery; however, signs and symptoms may not become apparent until as long as seven days after delivery.

Clinical Presentation

The vague nature of the presenting complaints can make the diagnosis of HELLP syndrome frustrating to physicians. Approximately 90 percent of patients present with generalized malaise, 65 percent with epigastric pain, 30 percent with nausea and vomiting, and 31 percent with headache. Because early diagnosis of this syndrome is critical, any pregnant woman who presents with malaise or a viral-type illness in the third trimester should be evaluated with a complete blood cell count and liver function tests.[2]

The physical examination may be normal in patients with HELLP syndrome. However, right upper quadrant tenderness is present in as many as 90 percent of affected women. Edema is not a useful marker because swelling is a factor in up to 30 percent of normal pregnancies. Hypertension and proteinuria may be absent or mild. The differential diagnosis of HELLP syndrome includes acute fatty liver of pregnancy, thrombotic thrombocytopenic purpura and hemolytic uremic syndrome.

Diagnostic Tests

The three chief abnormalities found in HELLP syndrome are hemolysis, elevated liver enzyme levels and a low platelet count. The hematocrit may be decreased or normal and is typically the last of the three abnormalities to appear. The finding of a decreased serum haptoglobin level may confirm

ongoing hemolysis when the hematocrit is normal.[3] The serum transaminase levels may be elevated to as high as 4,000 U per L, but milder elevations are typical. Platelet counts can drop to as low as 6,000 per mm (6 3 10^9 per L), but any platelet count less than 150 per mm^3 warrants attention. Unless DIC is present, the prothrombin time, partial thromboplastin time and fibrinogen level are normal in patients with HELLP syndrome. In a patient with a plasma fibrinogen level of less than 300 mg per dL (3 g per L), DIC should be suspected, especially if other laboratory abnormalities are also present.

Proteinuria and an increased uric acid concentration are useful in diagnosing preeclampsia but not HELLP syndrome.[4] The platelet count is the best indicator of the latter. Therefore, HELLP syndrome should be suspected in any patient who shows a significant drop in the platelet count during the antenatal period.[5] A positive D-dimer test in the setting of preeclampsia has recently been reported to be predictive of patients who will develop HELLP syndrome. The D-dimer is a more sensitive indicator of subclinical coagulopathy and may be positive before coagulation studies are abnormal.

Classification

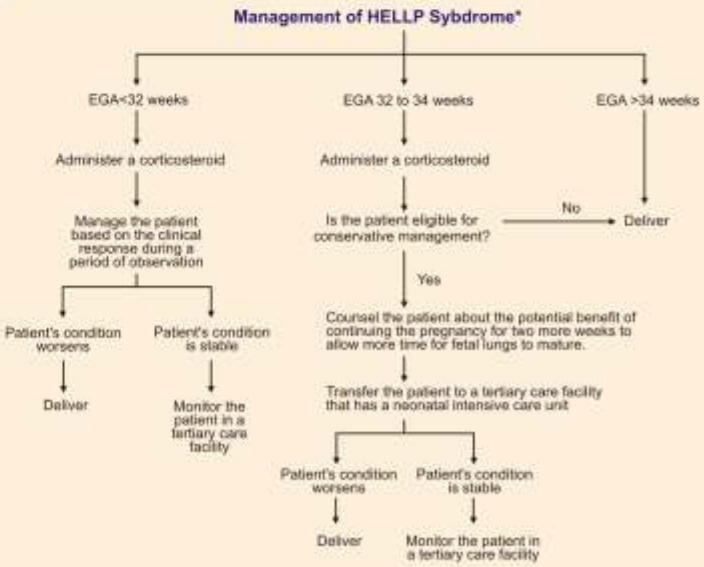
Two classification systems are used for HELLP syndrome. The first is based on the number of abnormalities that are present. In this system, patients are classified as having partial HELLP syndrome (one or two abnormalities) or full HELLP syndrome (all three abnormalities). Women with full HELLP syndrome are at higher risk for complications, including DIC, than women with the partial syndrome. Consequently, patients with the full syndrome should be considered for delivery within 48 hours, whereas those with partial HELLP syndrome may be candidates for more conservative management.[6]

Alternatively, HELLP syndrome can be classified on the basis of platelet count nadir: class I, less than 50,000 per mm (50 3 10^9 per L); class II, 50,000 to less than 100,000 per mm (50 to 100 3 10^9 per L); and class III, 100,000 to 150,000 per mm (100 to 150 3 10 per L). Patients with class I HELLP syndrome are at higher risk for maternal morbidity and mortality than patients with class 2 or 3 HELLP syndrome.

Management

Once the diagnosis of HELLP syndrome has been established, the best markers to follow are the maternal lactate dehydrogenase level and the maternal platelet count.[7] Laboratory abnormalities typically worsen after delivery and peak at 24 to 48 hours postpartum. The peak lactate dehydrogenase level signals the beginning of recovery and subsequent normalization of the platelet count.[14] The platelet count nadir is somewhat predictive for hemorrhagic complications. The incidence of hemorrhagic complications is higher when platelet counts are less than 40,000 per mm^3 (40 3 10^9per L). However, hepatic imaging and liver biopsy have shown that laboratory abnormalities do not correlate with the severity of HELLP syndrome. Therefore, patients with HELLP syndrome who complain of severe right upper quadrant pain, neck pain or shoulder pain should be considered for hepatic imaging regardless of the severity of the laboratory abnormalities, to assess for subcapsular hematoma or rupture.[8]

Prompt recognition of HELLP syndrome and timely initiation of therapy are vital to ensure the best outcome for mother and fetus. When the syndrome was first described, prompt delivery was recommended. Recent research suggests that morbidity and mortality do not increase when patients with HELLP are treated conservatively. The treatment approach should be based on the estimated gestational age and the condition of the mother and fetus.



Patients with HELLP syndrome may be eligible for

conservative management if hypertension is controlled at less than 160/110 mm Hg, oliguria responds to fluid management and elevated liver function values are not associated with right upper quadrant or epigastric pain. One study found that pregnancy was prolonged by an average of 15 days when conservative management (i.e., bed rest, fluids and close observation) was used in patients who were at less than 32 weeks of gestation. Maternal morbidity was not increased. For infants, the prolongation of pregnancy translated into less time in the neonatal intensive care unit, a decreased incidence of necrotizing enterocolitis and a decreased incidence of respiratory distress syndrome. Women treated conservatively should be managed in a tertiary care center that has a neonatal intensive care unit and a perinatologist available for consultation.

In the past, delivery in patients with HELLP syndrome was routinely accomplished by cesarean section. Patients with severe HELLP syndrome, superimposed DIC or a gestation of less than 32 weeks should be delivered by cesarean section. A trial of labor is appropriate in patients with mild to moderate HELLP syndrome who are stable, have a favorable cervix and are at 32 weeks of gestation or greater.

Patients with HELLP syndrome should be routinely treated with corticosteroids. The antenatal administration of dexamethasone (Decadron) in a high dosage of 10 mg intravenously every 12 hours has been shown to markedly improve the laboratory abnormalities associated with HELLP syndrome. Patients treated with dexamethasone exhibit longer time to delivery; this facilitates maternal transfer to a tertiary care center and postnatal maturity of fetal lungs.

Steroids given antenatally do not prevent the typical worsening of laboratory abnormalities after delivery. However, laboratory abnormalities resolve more quickly in patients who continue to receive steroids postpartum. Corticosteroid therapy should be instituted in patients with HELLP syndrome who have a platelet count of less than 100,000 per mm^3 (100 3 10 per L) and should be continued until liver function abnormalities are resolving and the platelet count is greater than 100,000 per mm^3 (100 3 10^9 per L).

Patients with HELLP syndrome should be treated prophylactically with magnesium sulfate to prevent seizures, whether hypertension is present or not. A bolus of 4 to 6 g of magnesium sulfate as a 20 percent solution is given initially. This dose is followed by a maintenance infusion of 2 g per hour. The infusion should be titrated to urine output and magnesium level. Patients should be observed for signs and symptoms of magnesium toxicity. If toxicity occurs, 10 to 20 mL of 10 percent calcium gluconate should be given intravenously.

Antihypertensive therapy should be initiated if blood pressure is consistently greater than 160/110 mm Hg despite the use of magnesium sulfate. This reduces the risk of maternal cerebral hemorrhage, placental abruption and seizure. The goal is to maintain diastolic blood pressure between 90 and 100 mm Hg. The most commonly used antihypertensive agent has been hydralazine (Apresoline), which is given intravenously in small incremental doses of 2.5 to 5 mg (with 5 mg as the initial dose) every 15 to 20 minutes until the desired blood pressure is achieved. Labetolol (Normodyne) and nifedipine (Procardia) have also been used with success.

Because of reported potentiation of effect, care should be taken when nifedipine and magnesium sulfate are given concurrently.[22] Diuretics may compromise placental perfusion and therefore are not used to control blood pressure in patients with HELLP syndrome. A hypertensive crisis may be treated with a continuous infusion of labetolol.

Between 38 and 93 percent of patients with HELLP syndrome receive some form of blood product. Patients with a platelet count greater than 40,000 per mm^3 (40 3 10^9 per L) are unlikely to bleed. These patients do not require transfusion unless the platelet count drops to less than 20,000 per mm^3 (20 3 10^9 per L). Patients who undergo cesarean section should be transfused if their platelet count is less than 50,000 per mm^3 (50 3 10^9 per L). Prophylactic transfusion of platelets at delivery does not reduce the incidence of postpartum hemorrhage or hasten normalization of the platelet count. Patients with DIC should be given fresh frozen plasma and packed red blood cells.

The laboratory abnormalities in HELLP syndrome

typically worsen after delivery and then begin to resolve by three to four days postpartum. Plasmapheresis has been successful in patients with severe laboratory abnormalities (i.e., a platelet count of less than 30,000 per mm^3 [30 3 10^9 per L] and continued elevation of liver function values) who have required repeat transfusions to maintain their hematocrit at 72 hours postpartum. In these patients, plasmapheresis has resulted in an increase in the platelet count and a decrease in the lactate dehydrogenase level.

Anesthesia Considerations

Pain relief with intravenous narcotics and local anesthesia is acceptable but certainly not optimal for pain control. Epidural anesthesia has been controversial but is the technique of choice when it can be accomplished safely.[9] Insertion of an epidural catheter is generally safe in patients with a platelet count greater than 100,000 per mm^3 (100 3 10^9 per L), normal coagulation studies and a normal bleeding time. General anesthesia can be used when regional anesthesia is considered unsafe.

Complications

The mortality rate for women with HELLP syndrome is approximately 1.1 percent. From 1 to 25 percent of affected women develop serious complications such as DIC, placental abruption, adult respiratory distress syndrome, hepatorenal failure, pulmonary edema, subcapsular hematoma and hepatic rupture. A significant percentage of patients receive blood products.

Infant morbidity and mortality rates range from 10 to 60 percent; depending on the severity of maternal disease. Infants affected by HELLP syndrome are more likely to experience intrauterine growth retardation and respiratory distress syndrome.[10]

Prognosis

Patients who have had HELLP syndrome should be counseled that they have a 19 to 27 percent risk of developing the syndrome in subsequent pregnancies. They also have up to a 43 percent risk of developing preeclampsia in another pregnancy. Patients with class I HELLP syndrome have the highest risk of recurrence. When the syndrome recurs, it tends to develop later in gestation and is generally less severe after two episodes. Patients who have had HELLP syndrome may subsequently use oral contraceptive pills safely. Patients who develop atypical early-onset preeclampsia or HELLP syndrome should be screened for the presence of antiphospholipid antibodies.[11]

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ECLAMPSIA – PRACTICAL TIPS FOR MANAGEMENT

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Introduction

Eclampsia is a serious complication of pregnancy. Defined as onset of tonic and clonic convulsions in a pregnant woman with preeclampsia (BP more than 140/90 and protienuria).

The patho-physiology of eclampsia is thought to involve cerebral vasospasm leading to ischemia, disruption of the blood brain barrier and cerebral edema.

Principles of management

- ***General measures***

  Avoid maternal injury and attention to airways

  Left lateral position and suctioning of any secretions

  Insertion of padded tongue blade or airway

  Oxygen supplementation at 8-10L/min

  Secure i.v. access at least at two sites to commence treatment

  Urinary catheterization with Foley's catheter

- ***Control of Seizures***

  Magnesium sulphate is the drug of choice for seizure control

- ***Control of blood pressure***

  To prevent CVA, pulmonary edema and renal failure and placental abruption.

- ***Delivery- definitive treatment***

The definitive treatment of eclampsia is delivery, irrespective of gestational age. The gestational age, cervical status, fetal condition and position need to be determined before determining the most appropriate route of delivery. Vaginal delivery is a safer option prolonged induction should, however, be avoided.

Magnesium sulphate for women with eclampsia

Cochrane reviews confirm that magnesium sulphate is better than diazepam, phenytoin or lytic cocktail for treatment of women with eclampsia (Duley 2000).

Preparing Dosages of magnesium sulphate It is available as 50% w/v and 25% w/v ampoules.

- **50% w/v, 2 ml ampoule = 1 g** Magnesium Sulphate - **for both i.m as well as i.v.**
- **25% w/v 2 ml ampoule = 0.5 gram** Magnesium Sulphate – **for only i.v. route.**

Intravenous Magnesium Sulphate - 4 ampoules of 50% soln (or 8 ampoules of 25% soln) amounts to 4 gm which is diluted in distilled water to make it 20 ml and give it slow i.v. not less than 1g /min

Intramuscular Magnesium Sulphate - For IM injection it should be 50% soln. Volume is 10ml (5gm) and should be given deep i.m. in buttocks.

Addition of 1 ml of 1% xylocaine to solution help to reduce pain at injection site.

Monitoring during MgSO4 regime –

The maintenance dose of Magnesium Sulphate is given only after assuring that:

- Patellar reflex is present
- Respiration not depressed.
- Urine output during previous 4 h- exceeded 100 mL.

Serum monitoring of magnesium levels has been advocated, but is expensive and has not been shown to be superior to clinical monitoring.

Alternative regimens for magnesium sulphate

- ***Pritchard 1955*** - *suggested changing the loading*

dose to 4 g by intravenous infusion as 20% soln at a rate not to exceed 1g/min, and increasing the maintenance dose to 5 gm i.m. every four hours. This regimen is still ***widely used, particularly in the developing world.***

Disadvt. - pain and infection at the i.m. injection site.

- ***Zuspan 1978*** *- loading dose is 4 g i.v. infusion as 20% soln at a rate not to exceed 1g/min, followed by an infusion of 1 g per hour.*

  This is the standard intravenous regimen, ***widely used in many countries****.*

Other low dose regimens

- Dhaka Regime - The loading dose of magnesium sulphate was 10 gm. Following this 2.5 gm was given intramuscularly 4 hourly, for 24 hours after administration of the first dose.

  Disadvt. – Small sample size, More randomized trials are required.

- Low dose regime by Dr. Sardesai, Solapur - loading dose of magnesium sulphate 4 gm i.m. or i.v. in 20 cc 25 % dextrose. Following this 2 gm i.m./diluted i.v., 3 hourly.

MgSO4 toxicity

Plasma Level of magnesium (mEq/lit)	Signs of Toxicity
4 - 7	Nil – this is a required level for prevention of eclampsia
>8	Patellar reflex disappears
8 – 10	Uterine relaxation
10-12	Respiratory depression
>12	Respiratory paralysis

Management of toxicity

- Prompt tracheal intubation and mechanical ventilation in case of resp. depression.
- Calcium Gluconate 1 gm slow i.v. with cardiac monitoring.
- Stop further Magnesium Sulphate doses.

Some facts in our country

- Pritchard et al in 1984 suggested that the dose of magnesium sulphate should be limited in women who are known to be or appear to be small. Women in India, especially from rural areas or from low socioeconomic strata tend to have smaller weights.
- In our country, the key issue is maternal transport in rural area after they start eclamptic convulsions. The low dose magnesium sulphate regime for ANMs, medical officer, working at PHCs and doctors working at periphery is of utmost help as they can give 2gm magnesium sulphate IM and then shift the patient to a tertiary center without any fear of precipitating a convulsion during transportation as is been practiced in Solapur district of Maharashtra under guidance of Dr. Mrs. Sardesai.

Thus low dose magnesium sulphate regimen should be popularized at the first contact level i.e. the primary care level.

QUIZ ON ENIGMATIC PREGNANCY INDUCED HYPERTENSION

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1. The basic disorder underlying pre-eclampsia is :
   a. Hypertension
   b. Vasospasm
   c. Hemorrhage
   d. Prostacyclin release

2. Following are the criteria for severe pre-eclampsia except :
   a) Proteinuria ≥ 5g in 24hrs
   b) Oliguria (≤ 400ml in 24hrs)
   c) Platelet count ≤ 1,50,000/ cumm
   d) IUGR
   e) None of the above

3. Women with preeclampsia have markedly increased urinary excretion of calcium. *True/ False*

4. Early serum markers for pre-eclampsia are all except :
   a) Raised uric acid
   b) Decreased VEGF
   c) Decreased Placental Growth factor (PlGF)
   d) Increased soluble fms-like tyrosine kinase 1 (sFlt-1)

5. The following are predictive tests assessed for development of pre-eclampsia, except
   a) Roll-over test
   b) Angiotensin II sensitivity test
   c) Isometric exercise test
   d) Urinary catecholamines excretion
   e) None of the above

6. Match the following :

Risk factor	*Degree of risk for pre-eclampsia*
a) Obesity (BMI>30)	i) 2-3 fold
b) Long birth interval (>10yrs)	ii) 4 fold
c) Previous severe/ early onset PE	iii) 2 fold
d) Family h/o PE in mother / sister	iv) 7 fold

7. Parenteral labetalol should be avoided in women with asthma and those with congestive heart failure. *True/ False*

8. Diuretic therapy should be used antenatally in pre-eclampsia only for treating
   a) Oliguria
   b) Peripheral edema
   c) Pulmonary edema

9. Drug contra-indicated for controlling hypertension during pregnancy is
   a) Nifedipine
   b) Methyldopa
   c) Enalapril
   d) Hydralazine
   e) None of the above

10. Following is not a marker of HELLP syndrome
    a) Thrombocytopenia < 1,00,000/cumm
    b) LDH > 6000 IU/L
    c) Burr cells/ Schistiocytes in the blood smear
    d) Reduced plasma haptoglobin
    e) Bilirubin >1.2mg/ dL

11. Indications for immediate delivery in pre-eclampsia are all except
    a) IUGR
    b) Worsening liver/ renal functions
    c) Reversed umbilical artery flow on Doppler
    d) HELLP syndrome

12. In pre-eclampsia patients with thrombocytopenia, platelet counts remain low initially but will rapidly increase after the ..... postpartum day
    a) Second b) Third
    c) Fourth d) Fifth

13. Side effects of Nifedipine are all except
    a) Tachycardia b) Headache
    c) Flushing d) Diarrhea

14. Blood pressure should be monitored carefully for at least four days following delivery as the highest reading can occur at this time. *True/ False*

15. In a woman with severe pre-eclampsia following investigations suggest worsening of disorder except
    a) Increasing hematocrit
    b) Increasing proteinuria
    c) Decreasing serum creatinine
    d) Decreasing platelet count

16. Trial which evaluated prophylactic magnesium sulphate therapy versus placebo in pre-eclamptic women and showed that MgSO4 will roughly halve

the incidence of eclampsia
a) CLASP b) MAGPIE
c) ALDOMET
d) Collaborative Eclampsia Trial Group

17. Rate of fluid administration in patient of pre-eclampsia should be between .....to avoid risk of pulmonary edema.
a) 50-60ml/hr b) 60-75ml/hr
c) 75-125ml/hr d) 150-200ml/hr

18. Regime used for administration of Magnesium sulphate for eclampsia which utilizes a loading dose of 4gms I/V slowly over 3 to 5 minutes followed by an infusion of 1gm/hr is
a) Pritchard regime b) Zuspan regime
c) Sibai regime d) Parkland regime

19. In 1995 the Eclampsia Collaborative Trial group compared effects of magnesium sulphate versus
a) Phenytoin, Lytic cocktail
b) Diazepam, Lytic cocktail
c) Chlordiazepoxide, phenytoin
d) Phenytoin, Diazepam

20. Match the following :

Drug	*Side effect/ precaution*
a) Labetalol	i) Exaggerated hypotensive effect with MgSO4
b) Hydralazine	ii) Depression
c) Nifedipine	iii) Reflex tachycardia
d) Methyldopa	iv) Methemoglobinemia
e) Sodium Nitroprusside	v) Avoided in greater than first degree heart block
f) Nitroglycerin	vi) Cyanide toxicity

21. A 2009 Cochrane database review of 59 trials (3756 women) to study the effect of administration of anti-platelets such as low dose aspirin to pregnant women showed .....reduction in risk of pre-eclampsia.
a) 5% b) 17%
c) 27% d) No

22. Sequential features of MgSO4 toxicity (loss of patellar reflexes, respiratory depression, muscular paralysis &respiratory arrest) correlate with following serum Magnesium levels
a) 8-10 mEq/L, 10-12 mEq/L, 12-15mEq/L
b) 6-8mEq/L, 8-10 mEq/L, 10-12 mEq/L.
c) 4-7 mEq/L, 7-9 mEq/L, 9-12 mEq/L.
d) 10-12 mEq/L, 12-14 mEq/L, 14-16 mEq/L.

23. Monitoring UOP > 25ml/hr during MgSO4 therapy is essential because
a) MgSO4 causes water retention
b) MgSO4 has a nephrotoxic effect
c) MgSO4 is excreted largely by kidneys
d) None of the above.

24. A modest benefit in prenatal prevention or reduction in severity of pre-eclampsia has been demonstrated in some trials by use of
a) Fish liver oil, low dose aspirin, antioxidants
b) High dose calcium (2gm/d), anti-oxidants.
c) High dose calcium, (2gm/d), low dose aspirin.
d) Fish liver oil, magnesium supplements

25. Identify the pathological condition

Answers

1. b	2. c	3. False
4. a	5. d	6. a- iii, b-i, c-iv, d-ii
7. True	8. c	9. c
10. b	11. a	12. b
13. d	14. True	15. c
16. b	17. c	18. b
19. d	20. a-v, b-iii, c-i, d-ii, e-vi, f-iv	21. b
22. a	23. c	24. c

25. Subcapsular hematoma dissecting under Glisson's capsule in a fatal case of eclampsia

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http://cueflash.com/decks/Pathology_chapter_18_Images

SPECIFIC ISSUES IN MATERNAL HEALTH IN BUNDEKHAND REGION

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"There is no chance of the welfare of the world unless the condition of women is improved. It is not possible for a bird to fly on one wing."

- Swami Vivekananda

India accounts for about 15% of maternal deaths worldwide with the higher maternal mortality ratio in the most populous (186.7 million) state of Uttar Pradesh. Woman belonging to central and eastern region of Uttar Pradesh are less likely to undergo maternal complications than women residing in western region, but women residing in Bundelkhand region of Uttar Pradesh have higher chances of experiencing maternal complications and maternal deaths.[1]

Historically and culturally Bundelkhand has a very rich past. It is situated in central India, it is often referred to as the heart land of our country. The once prosperous Bundelkhand is now identified as one of the most backward and poorest region of the country. The reasons for this being low socioeconomic, literacy and agricultural yield, lack of other sustainable source of livelihood, depletion of natural resources, government apathy and recurring natural calamity in the form of drought due to environmental degradation and global warming. Followings are burning issues behind this prevalent unsafe- motherhood.

- **Drought and searching of water resources.** During FGD with village it was analyzed that in 70% of the families, the responsibility of fetching water rests with the women, in 20% families with the girls and in 10% of families male fetch the water. The above figures show that it is the women who bear the burden of reduced accessibility of water primarily. The reduced accessibility hampers the poor women as much time and energy is lost in it and sometimes also results in loss of wages.[2]

- **Migration assumes new dimensions as Drought Haunts the state.** Most women fear their security because there is no proper accommodation, no privacy makes them vulnerable for unwanted attention. Due to an increase in expenses make them to do hard work with their husband (According to the filed study report of MPANM).[2] It results to either no approach or occasional approach to health resources.

- **Decreasing food, increasing insecurity in Bundelkhand.** Bundelkhand has been playing a notable role in wheat production since older times. In the years 1919-2000, MP part of Bundelkhand region that has contributed 14.35% in the total state share of wheat production, but this figure has now reached the lowest level and was recorded at 7.1% during the last production years. Economy of the entire nation still largely depends on agriculture.

- **Education, Gender, Access and Participation to elementary education in Bundelkhand region of Uttar Pradesh.** Literacy rate is the most basic indicator of a country's educational development. In the Bundelkhand region of UP more than half the population of the region is with out any literacy skills. Literacy rates of the region stands at 48.41% in comparison to national literacy rate i.e. 85.38%. Female literacy is considered to be a more sensitive index of social development compared to overall literacy rates. Yet, about only one third

females (34.98%) are literate in the region.[3]

- **Lack of sound and intact political priority.** The feature of safe- motherhood in countries may depends on the formation and mobilization of their national network and the recognition that reducing maternal mortality is not a technical or medical challenge but also a political one.[4]
- **Health Access in Bundelkhand.** Uttar Pradesh and Uttarkhand contributed 22% of maternal deaths in India. In Uttar Pradesh, Bundelkhand has the worst health care facilities. 50% of maternal deaths occur within 24 hours of delivery and maximum of them occur before reaching the facility.[5]
- **Health Quality.** Health care facilities at primary health centre and sub-centre levels are mostly understaffed and short of drugs and essential supplies and that they sometimes suffer from low staff morale and motivation. This to a large extent affects the quality ofmaternity care.[6]
- **Health care costs.** The health status in Bundelkhand village in general is inadequate and does not comply even with the minimum public health requirements. The Government PHCs are not regular and not efficient in accomplishing its mission of facilitating quality medical out reach to the poor in the rural localities, both due to poor infrastructure, equipments and inadequate personnel.
- **Lack of Awareness at community level.** Childbirth is not only the joyous event but it is also a time of pain, fear, suffering and even death. Counseling about course and complications of pregnancy and maintenance of funds, transportation and approach to facility must be pre-concluded before emergency.

Specific issues regarding the Bundelkhand region are multiple, burning and eye opener issues. Asian women's life time risk of dying from pregnancy is 1 in 94 and in developed countries it is 1 in 2800.[7] only 41% of maternal death are due to medical or obstetrical causes and for 59% of maternal deaths "OTHERS" causes are responsible.[8] Among all 64.74% of maternal deaths occur at home; SRS:2008-2009. Analysis of "OTHERS" causes only possible by implementing different approaches to investigation of maternal deaths.[9] Thus is a time again we rethink and re-strength our safe motherhood. Every rural pregnant women should get emergency obstetrical and new born care by rural health centre and referral hospital and stocking them with necessary drugs and equipment.[10] In last but not least review maternal benefits schemes meant for poor community.

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EACH BIRTH AT FACILITY – A VISION

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Almost every maternal death is an event that could be avoided and should never have been allowed to happen. United Nations Millennium Development Goal-5 aims to reduce MMR by three quarters from 1990 to 2015. In the India maternal death is a big tragedy. In India, 28 million pregnancies occur each year and out of it 26 millions women are given child birth. About 67000 maternal deaths occurrs every year and this is about 15 % of overall maternal deaths in the world. Maternal mortality is not about statistics but it is big disaster for the nation. It is about women with names, faces. Faces seen with agony, distress, despair. Faces that continue to live in the memories and haunt our dreams. Not because these women died in their prime lives, die at a time of expectation and joy, it's a terrible way to die.

In India, EAG- Aassam, MP-Chhatisgarh and UP-Uttarakhand are responsible for 62%, 10% and 22% of maternal deaths respectively (Source RGI-SRS-MMR Report 2009).

By doing pathway analysis, about 67.74%, 6.06% and 29.20% of maternal deaths occurrs at home, at route and at facility. By doing analysis of "When do maternal deaths occur", about 50% of the deaths within first 24 hours following delivery, 25% occurs during pregnancy, 20% maternal death occur 7 days after delivery and 5% maternal deaths occur 2-6 weeks after delivery. By doing both analysis conclusion is about 73.80% of maternal deaths occurs without facility, 75 % of maternal deaths occur after delivery and maximum within first 24 hour of delivery. It is very-very important for reduction of maternal mortality; **we have to conduct each and every delivery at facility or at the level of institutions.**

For this mission, the **Manthan Project** – maternal and Neonatal health project for four years from November 2009 to November 2013, which supports the maternal and newborn health programs under the National Rural Health Mission to reduce maternal and newborn mortality in Uttar Pradesh (U.P.). The goal of the Manthan project is to work with the Government of U.P. to improve the focus of its programming on the evidence based maternal and newborn health interventions and the operational strategies needed to expand coverage of these interventions.

In Manthan project there are three plans to promote the institutional deliveries. Janani-Surakshha Yojana, Soubhagwati surakshhit matratva Yojana and National life insurance policy.

Janani Surakshha Yojana – Any woman below poverty line, can have her normal, complicated or cesarean delivery at private registered Private Hospitals, Nursing homes. Registered hospital/ Nursinghome will get Rs. 1500 for vaginal delivery and Rs. 4500 for cesarean delivery from national or private bank. Simultaneously urban woman will get Rs. 1000 and rural women will get 1400 for delivery from national or private banks and Asha will get Rs. 600 and Rs. 200 for rural and urban area from respected PHC.

Soubhagwati Surakshha Yojana – By applying the Janani Surakshha Yojana institutional deliveries are improving but in few states. % of institutional deliveries are less than the other states, thus the system needs more support. In this yojana, registered private hospitals and nursing home will get Rs. 1850 for each vaginal delivery or cesarean delivery for a woman who is below the poverty line from government, along with this rural women will get Rs. 1400 and urban women will get Rs. 1000 from government or private banks. Aasha will get Rs. 600 for rural and 200 for urban area from respected PHCs.

National Health Insurance Policy – In this policy, registered family (maximum five units) below poverty line can use Rs. 30000 per family per year on floater basis from a registered private hospital or nursing homes. This health policy gives many health benefits along with maternal and new born benefits.

Thus each and every private institution must be a part of these policies to promote directly institutional deliveries for a woman below the poverty line with mission of each birth at a facility.

Data Collection of Case History of Maternal Mortality & Near Miss Maternal Mortality To Improve the Quality of Obstetric Care

Coordinator

Dr. Sadhana Gupta

Chairperson Safe Motherhood Committee (2011–2013)

Dr. Sheela Mane

Immediate Past Chairperson Safe Motherhood Committee (2008–2010)

Question No.	Questions	Response	Answer	Comments of Team
A. Case Details				
1.	Hospital Name			
2.	Date of case extraction	Date:		
3.	Name of women			
4.	Registration No. (if any)	No. / NA		
5.	Antenatal record available in case-notes	Yes : No :		
6.	Date & Time of admission	Date: Time:		
7.	Pulse	Rate /minute		
8.	Blood Pressure	Systolic mm/Hg Diastolic mm/Hg		
9.	Alive	Yes .....1 No 2		
10.	Date & Time of Discharge			
11.	Dead:Date & Time of Death	Date:		
12.	No. of days in the hospital			
13.	Was the woman referred TO the hospital from elsewhere?	Yes ..... 1 No 2		
14.	From where?			
15.	For what reasons?			
16.	Discharge diagnosis			
B. Woman's Details				
1.	Age			
2.	Parity	No. of deliveries :		
3.	Gravidity	No. of pregnancies :		
4.	Maternal complication in previous pregnancy	Yes ..... No		
5.	Early pregnancy losses	No :		
6.	Live births	No :		
7.	Stillbirths	No :		
8.	Neonatal deaths	No :		
9.	Low birth weight	No :		
10.	Preterm births	No :		
11.	Any others	No :		
C. Obstetric Hemorrhage				
1.	When did the hemorrhage start	Before admissionAfter admission		
2.	At what time of day did the hemorrhage start?			
3.	Was the hemorrhage ante-, intra- or postpartum?	Antepartum Intrapartum Postpartum		
4.	Total estimated amount of blood loss			

5.	Status of clinician who saw the patient on admission	Student midwife Midwife Senior midwife Medical student Medical officer Senior medical officer Specialist obstetrician Other (specify)		
6.	Was an experienced member of staff informed?	Yes :		
7.	At what time was a senior member of staff informed of the hemorrhage?	Time:		
8.	At what time did a senior member of staff first examine the patient?	Time:		
9.	Was intravenous access achieved?	Yes : No :		
10.	Blood type/ Cross match	Yes :		
		No :		
11.	Hemoglobin/ Hematocrit	Yes : No :		
12.	Was a request made for units of blood	Yes : No :		
13.	How many units of blood were requested	Unit :		
14.	Time span between request and availability of blood for transfusion	Hours : Minute:		
Where there any of the following indications of the need for coagulation tests?				
1.	Placenta abruption	Yes : No :		
2.	Preeclampsia	Yes : No :		
3.	Sepsis	Yes : No :		
4.	Transfusion of more than 2 liters of blood	Yes : No :		
Were any of the following tests carried out?				
1.	Bleeding time/ Clotting time	Yes : No :		
2.	Platelet count	Yes : No :		
3.	Was a blood transfusion given?	Yes : No :		
4.	Were intravenous fluids given	Yes : No :		
5.	How many unit and which I/v fluids (crystalloids and/ or colloids) given?	Less than 3 liters / 3 liters or more		
6.	Was the pulse rate monitored at all in the first two hours after the hemorrhage was recognized?	Yes : No :		
7.	At what intervals was the woman's pulse measured during the first two hours after the hemorrhage was recognized?	15 minute intervals 30 minute intervals Other (specify)		
8.	Was the blood pressure monitored in the first two hours after recognizing the hemorrhage?	Yes : No :		
9.	At what intervals was the woman's blood pressure measured?	15 minute intervals 30 minute intervals Other (specify)		
10.	Was a urinary catheter inserted	Yes : No :		
11.	Was urine output measured at all?	Yes : No :		
12.	Was it measured at least once every hour?	Yes : No :		
13.	Was the patient ever taken to the operating theatre because of the hemorrhage?	Yes : No :		
14.	Which operation was performed?	Yes : No :		

15.	What was the date of operation?	Date : Time :		
In the event of antepartum hemorrhage were any of the following examinations conducted				
1.	Abdominal examination	Yes : No :		
2.	Ultrasound Scan	Yes : No :		
3.	Vaginal examination	Yes : No :		
4.	Was the placental site known (by scan) at the time of vaginal examination?	Yes : No :		
5.	Where was the vaginal assessment conducted?	Operating theatre Labor/ maternity ward Other (specify)		
6.	Were oxytocics used in the treatment of the postpartum hemorrhage	Yes : No :		
D: Eclampsia				
1.	Where did the first convulsion occur?	In the hospital In another hospital In a health centre/clinic At home Other (specify)		
2.	Date & Time of first convulsion?	DD MM YY Time : AM PM		
3.	Was a management plan formulated for this case?	Yes : No :		
4.	Who formulated the management plan?	Student midwife Midwife Senior midwife Medical student Medical officer Senior medical officer Specialist obstetrician Other (specify)		
5.	What was the highest diastolic blood pressure recorded in the case notes?	mmHg		
6.	Is it severe hypertension? *(severe hypertensive BP on two occasions at least 4 hours apart) >160/110 mmHg*	Yes : No. :		
7.	Was anti hypertensive treatment given?	Yes : No :		
8.	What was route and dosage of anti hypertensive drug?			
9.	Anti convulsant used	Yes : No :		
10.	Dose and route of Anti convulsant	Magsulph Diagepam Other		
Were the following measurement taken whilst the woman was receiving Magnesium Sulphate				
1.	Respiratory rate	Yes : No :		
2.	Tendon reflexes	Yes : No :		
3.	Urine output	Yes : No :		
Were the following investigations performed at least once during the woman's in patient stay?				
1.	Bleeding/ Clotting time	Yes : No :		
2.	Platelet count	Yes : No :		
3.	Urine albumin/Renal function test	Yes : No :		
4.	Liver function test	Yes : No :		
5.	Did the woman labor at the hospital?	Yes : No :		

6.	Mode of delivery	Normal : Instrumental : LSCS :		
7.	Outcome of delivery	Normal : NICU : Still birth :		
Was a fluid balance chart maintained				
1.	Before labor?	Yes : No :		
2.	During labor?	Yes : No :		
3.	Was the blood pressure monitored after delivery?	Yes : No :		
4.	How often was the blood pressure monitored?	At least once every hrs. Longer than every hrs.		
5.	How long after delivery did this monitoring continue?	< 48 hrs. ≥ 48 hrs.		
6.	Was urine output monitored after delivery	Yes : No :		
7.	How often was urine output monitored?	At least once every hrs. Longer than every hrs.		
8.	How long after delivery did this monitoring continue?	< 48 hrs. ≥ 48 hrs.		
Obstructed Labor				
1.	Date and Time of the diagnosis of obstructed labor?	DD MM YY AM PM		
2.	Method of documentation of labor	Verbal Clinical note Partogram Paperless partogram		
3.	Was the interval of time between the diagnosis of obstruction and delivery of the fetus	Less than 2 hrs. Two hrs or more		
4.	Were any reasons given in the case notes for this delay in delivery	Yes (specify) No (reasons)		
5.	Was a urinary catheter inserted?	Yes : No :		
Monitoring of Obstructed Labor				
1.	Urine output	Yes : No :		
2.	Blood pressure	Yes : No :		
3.	Pulse	Yes : No :		
4.	Temperature	Yes : No :		
5.	Was blood taken for typing and cross matching?	Yes : No :		
6.	Was intravenous access achieved?	Yes : No :		
7.	Were any antibiotics started once obstructed labor was diagnosed?	Yes : No :		
8.	Date and time of antibiotics first started	DD MM YY AM PM		
9.	Detail of doses route and type of anibiotic given			
10.	Mode of delivery	Normal : Instrumental : LSCS :		
11.	Outcome of delivery	Normal : NICU : Still birth :		

Forthcoming Issue...

Dear Readers,

It is our pleasure to communicate that theme of our forthcoming issues are as follows –

1. **January 2012 on Criticare Care in Obstetrics**
2. **April 2012 on Obstetric Antepartum Hemorrhage**
3. **September 2012 on Obstetric Postpartum Hemorrhage**

I invite your contribution in form of article, atypical case situation and quiz on theme of issues.
I also request to send your experience on any difficult situation, your project, work individually or as a group in rural areas, underprivileged area.

Thanks in advance.

Dr. Sadhana Gupta
Chairperson Safe Motherhood Committee

We thankfully acknowledge

LUPIN PHARMA

for their contribution.

अशोक चक्रधर

क्या क्या हो और क्या न हो!

ध्यान दो! ध्यान दो!!
क्या क्या हो और क्या न हो!!!

पांव ज्यों ही भारी हुए
चेक-अप कराना होगा,
दाई चाची जैसी
अनुभवि स्वास्थ्य सेविका को,
फौरन दिखाना होगा
वजन कराना होगा।
कमी आयरन की
शरीर में अगर हो तो,
गोलियां खिलानी होगी
जाके दिखलाना होगा।
वजन अगर गर्भिणी का बढ़ता हो नहीं,
खाना कैसा खाएं
यह राज समझाना होगा।
व्यसन तंबाकू या शराब का
चलेगी नहीं,
संतान की खातिर,
इन्हें न अपनाना होगा।
जाना होगा अस्पताल,
दरद हो ज्यादा काल,
परेशानी जो भी आए,
उसको भगाना होगा।
बैठे रहे घर में दरद उठते ही रहे,
घंटे आठ, दस और बारह गुजारे हैं।
गर्भकाल में ही यदि
खून जाए असमय,
तेज है बुखार
पर आप उसे टारे हैं।
गलत-सलत वे दवाई
यूं ही बैठ गए,
मति न लगाई, हुए ऐसे मतवारे हैं।
कोई दुर्घटना न घट जाए हरगिज,
कोई अनहोनी नहीं उस दरम्यान हो।

ध्यान दो! ध्यान दो!!
क्या क्या हो और क्या न हो!!!