



ERODE OBSTETRIC AND GYNAECOLOGICAL SOCIETY

Presents

***An Academic feast on
Role of CTG in the Modern era of Obstetrics***

Speakers

Dr. Uma Ram & Dr. Amrita Karthik

*Seethapathy Clinic & Hospital,
Chennai.*

Topics

2.30-2.50 pm - Pathophysiology of CTG

2.50 pm - 3.20 pm - Intrapartum guidelines of CTG

3.20 pm - 4.30 pm - Case Scenario Discussion

Date : Feb 10th 2019, Sunday

Time : 2.30 pm - 4.30pm

Venue : Atrium Hotel, Erode

Lunch : 1.30 pm - 2.30 pm

*Sponsored by **Tetrasys**
Life Science*

Message from the President

Dear members,

Greetings...

Thank you for gathering in large number for our first academic meet.

This month Dr Sri Revathy and Dr Vanithasri have contributed articles. We urge more members to contribute.

Our FOGSI President Dr Nandita Palshetkar has come out with theme for the year 2019 as “We for Stree – Safer, Stronger, Smarter” stressing that we take on the responsibility of going beyond healthcare and supporting women to achieve much more. Activities suggested include - To impart education to women via awareness camps to help keep them safe from diseases and safe from emergencies. To educate women on how to fulfil the nutritional requirements not only for themselves, but also to help provide balanced and nutrient dense meals for their children and families; To organize practical skill enhancement sessions and job placements; To train women on investment opportunities and to run different campaigns for the whole year by collaborating with corporate to help women gain independence and smartness in its true sense.

Let us all join hands in these activities as Our FOGSI President considers the development of women will be the single most important factor when it comes to bringing about and sustaining long term social change.

Thank all of you once again.



Dr. E.S. Usha MD., DGO.,
Fellow in fetal medicine
President EOGS



ROLE OF VITAMIN D IN WOMEN'S HEALTH

Vitamin D3, often called the “Sunshine Vitamin,” is a very important nutrient for women's health. Vit - D is a Steroid prohormone and it is synthesized in skin under ultra-violet light exposure. 7-Dehydrocholesterol present in the skin absorbs UV light to synthesize Vit D3. Vit - D deficiency commonly occurs in fat malabsorption, anticonvulsant use, chronic kidney disease, and obesity.

Serum Vit - D status is assessed by measuring Serum 25 OH Vit - D (by High Performance Liquid Chromatography)

Sufficient level of 25 OH Vit - D: 30 – 50 ng/ ml

Toxicity level > 50 ng/ml

Role of Vit - D in Obstetrics

- ☛ Preterm Labour
- ☛ Gestational Diabetes Mellitus
- ☛ Pre eclampsia
- ☛ Infections
- ☛ Primary Caesarean Sections

Role of Vit - D in Preterm Labour

- ☛ Vit - D deficiency is associated with both Preterm birth and poor neonatal outcome.
- ☛ 40 % of Preterm birth is associated with Chorioamnionitis.
- ☛ Vit - D in adequate level , maintains Anti Microbial and Anti Inflammatory response at the feto placental unit and prevents microbial invasion.
- ☛ Vitamin D also initiates the synthesis of Anti Microbial Peptide stimulator – Cathelicidin, which activates Monocyte Macrophage system and prevents microbial invasion.
- ☛ In case of Vitamin D deficiency, this protective mechanism is lost and there is increased risk of infection which predisposes to pre term labour.
- ☛ 68 % of women who get into preterm labour are identified to have Vitamin D deficiency.

Vit - D and GDM

- Vit - D supplementation enhances insulin sensitivity and glucose tolerance.
- Role of Vit - D in prevention of GDM is controversial.
- 83% of GDM women had low serum Vit - D level.
- ACOG 2016 - Vit - D supplementation in prevention of GDM is not yet proven.
- Vit - D significantly improves Insulin Sensitivity but not insulin production.

Vit - D and Preeclampsia

- Pathogenesis of Preeclampsia is quite a complex phenomena, but the most common reason for the development of Preeclampsia is endothelial dysfunction and inappropriate trophoblastic invasion.
- In Preeclampsia, there is tilt of balance towards anti angiogenic substances compared to angiogenic substances.
- Vit-D has got a definitive role in the prevention of Preeclampsia.

Mechanism of action

- Vit - D inhibits the release of adhesion molecules by endothelial cells and prevents endothelial dysfunction.
- Vit - D has a strong immunomodulatory and anti inflammatory effect.
- Vit - D in adequate level brings down the inflammatory cytokines like IL1, IL6.
- Vit - D receptors are present in trophoblastic cells and favour early phase of placental development and vascular remodeling at placental bed.
- 69% Preeclamptic women are Vit - D deficient.

Obstetric Facts

- 83% of GDM women had low serum Vit - D level.
- 74 % Indian pregnant women are Vit - D deficient.
- 69% of Pre eclamptic women have Vit - D deficiency.

- ☛ 68 % of Indian pregnant women who develop Preterm labour have Vit - D deficiency.
- ☛ Vit - D deficiency is associated with increased risk of primary Caesarean Sections due to reduced tensile strength of pelvic floor muscles.

Vit - D and Male Infertility

- ☛ Vit - D receptors are present in testis and scrotal musculature.
- ☛ Adequate vitamin D level is needed to complete the process of spermatogenesis.
- ☛ Vit - D influences sperm motility and total count by its non genomic effect.
- ☛ Vit - D def also causes Testosterone deficiency which impairs spermatogenesis.

Vit - D in PCOS

- ☛ Vitamin D receptors are present in pancreatic Beta cells which enhances insulin sensitivity.
- ☛ 68-85 % PCOS patients are Vit - D deficient and are insulin resistant.
- ☛ In addition to Metformin - Vit - D & Calcium therapy, regularizes menstrual cycle and better ovulation is documented.
- ☛ Vit - D - enhances MMP 2, MMP 9 which finally causes maturation of oocytes.
- ☛ Vit - D – 400 IU/day + Calcium 1 gm/ day for 3 months – improves ovulation rate – (Thomas et al).

Vit - D and Female Infertility

- ☛ Vit - D has a role in follicular development, AMH signalling, FSH sensitivity and Progesterone production.
- ☛ Vit - D deficiency causes granulosa cell dysfunction.
- ☛ Vit - D < 30 ng/ ml – has a higher risk of subfertility because of anovulation.
- ☛ Vit - D deficiency is associated with pro inflammatory effect which also causes embryo rejection.
- ☛ Serum Vit - D level is inversely related to BMI, so obese women are more prone to develop Vitamin D deficiency.

Vit - D and Endometriosis

- Impaired clearance of endometrial cells refluxed into peritoneal cavity and higher inflammatory response are the key factors involved in the pathogenesis of Endometriosis.
- Ectopic and eutopic endometrial cells are sites of extra renal synthesis of Vit - D by production of 1 alpha hydroxylase enzyme.
- Vit - D has a strong anti inflammatory effect and it reduces pro inflammatory cytokines which improves dysmenorrhea.

Vit - D and Fibroids

- Hypovitaminosis D is associated with increased volume and number of fibroid progression over 1 year follow up.
- Vit - D inhibits the growth of fibroid by the following mechanism:
 - Antiapoptotic effect of BCL1 and BCL2 protein reduced by adequate level of Vit - D ;
 - Caspase signalling cascade is activated by adequate level of Vit - D , which exerts an antiproliferating effect and keeps the size of fibroid under control.

Dosage of Supplementation :

- 60,000 IU once a week for 12 weeks.
- Maintenance dose : 60,000 IU once in 2 weeks for 8 weeks.
- In pregnant women : 200 – 400 IU / day is the dosage of proven safety.
- Vitamin D safety in first trimester is not yet proven , so ideal to start supplementation from 13 weeks.
- Newer studies show Vit - D supplementation in pregnancy upto 2000 IU/day to be safe, but safety data available on this is limited.
- 4000 IU/ day Vitamin D supplementation – is not advised.

References :

- Vitamin D and Pre-Eclampsia Hypponen E et al.
- Vitamin D and gestational diabetes I.Y.H.M. Poel et al.
- Vitamin D in the aetiology and management of polycystic ovary syndrome Rebecca L. Thomson.
- Vitamin D and male reproduction Martin Blomberg Jensen.



Dr. Sri Revathy Sadasivam MD (OG), DNB (OG),

MICOG, MRCOG (UK), Masters in Reproductive Medicine (UK)

Secretary EOGS



HYPERTENSION IN PREGNANCY

REVISIT TO REVISE

Types

1. Gestational hypertension
2. Pre eclampsia
3. Chronic hypertension

ACOG & NHBPEP Guidelines

- ✱ Systolic BP ≥ 140 and/or Diastolic BP ≥ 90 mmHg at two sittings at minimum 6 hrs interval.
- ✱ Sitting or semirecumbant position, with rest for atleast 10 min, cuff should cover 2/3 rd of the arm length.

Gestational hypertension

Blood pressure of $\geq 140/90$ that occurs first time in pregnancy, after 20 weeks gestation, without proteinuria. BP returns to normal within 12 weeks postpartum.

Pre Eclampsia

BP $\geq 140/90$ and Urinary albumin $\geq 1+$ in dipstick or urinary protein > 300 mg/ L in 24 hrs urine collection. Dipstick method done at two occasions at least 6 hrs apart.

Alkaline samples (treated for UTI) may give false negative result.

Chronic Hypertension

BP $\geq 140/90$ diagnosed before pregnancy or within 20 weeks of gestation which is not attributable to Gestational trophoblastic disease, or which extends after 12 weeks postpartum.

Risk Factors

- ✱ Primi gravida
- ✱ Obesity
- ✱ Maternal anemia especially Folate deficiency
- ✱ Multiple pregnancy
- ✱ Fetal hydrops
- ✱ Fetal aneuploidy
- ✱ Antiphospholipid antibody syndrome and other Thrombophilias

- * Hyperhomocysteinemia
- * Previous history of Pre eclampsia
- * Pre existing medical conditions like Renal disease, Diabetes or Connective tissue disorders

Pathophysiology

Normal Pregnancy

Trophoblast invasion occurs into entire length of spiral arteries – both decidual and myometrial part. These vessels become low resistant, high flow system. Ensures high blood flow to the placenta.

GHT and Pre eclampsia

Trophoblast invasion only up to decidual part of spiral arteries – called poor placentation. Hence these vessels are still sensitive to vasomotor influences and cause poor placental perfusion. Eventually placental ischemia and infarct take place followed by release of free radicals and toxins into maternal circulation.

Hemodynamic Profile in Normal Pregnancy and Pre eclampsia

PARAMETER	NORMAL	PE
Plasma expansion	50 %	16 %
Cardiac output	43 % rise	21 % rise
Mean arterial pressure	No significant change	53 % rise
Systemic vascular resistance	21 % fall	24 % rise
Colloid oncotic pressure	14 % fall	No such fall
Pulmonary capillary pressure	No significant change	33 % rise

Predictors Of Pre eclampsia

So many factors have been and being studied. Few with better predictability are,

1. Uterine artery Doppler at the time of FTS and target scan.
2. Low maternal serum PAPP-A, Beta HCG.
3. Mean arterial pressure $\geq$ 88 mmHg at 11-13 and 20-22 weeks.
4. Low urinary calcium and calcium creatinine ratio.

Diagnosis and Management

Once diagnosis is established as per the classification, management should be INDIVIDUALISED depending on the gestational age and presence of other maternal and fetal complications.

Assess The Severity **Then Decide**

Maternal - Platelet count, Haematocrit, Liver function, Renal function (intake output and lab tests) Fundus examination of eye, serum uric acid, ECG.

Fetal - USG for gestational age, liquor and growth parameters, Umbilical artery Doppler, FH monitoring(NST).

Gestational Hypertension & Mild Pre eclampsia

Scene A -

BP $\leq$ 150/100 & No risk factors - Outpatient management after explaining warning symptoms and signs.

Better to have self monitoring of blood pressure at home. Weekly urine albumin, Biweekly growth and liquor assessment, biweekly NST.

If BP is well controlled with drugs deliver at term but must not be allowed to go post term.

Mode of delivery should be individualized according to patient. Pre eclampsia is not an isolated indication for C Section.

Scene B -

BP > 150/100, GA < 30 weeks, doubt of other risk factors like IUGR or maternal end organ damage $\rightarrow$ ADMIT AND ASSESS. Steroids must be given if GA < 34 WEEKS. BP controlled with anti hypertensives and no/ mild oligohydramnios, normal blood parameters $\rightarrow$ pregnancy continued till 38 weeks. Regular diet and NO salt restriction.

Weekly NST and Bio physical profile for fetal well being. Mode of delivery is decided according to the presence or absence of risk factors.

Mild Pre Eclampsia At Term (> 38 Weeks)

ADMIT and rule out risk factors

Assess BISHOP SCORE $\rightarrow$ Favourable $\rightarrow$ Induction of labour (PG

E2/ Foleys)

$\rightarrow$ Unfavourable $\rightarrow$ Expectant management

may be continued with careful maternal and fetal monitoring. 6th hourly BP monitoring and 12th hourly urinary albumin must be done. Cervical ripening can be tried with Foleys under antibiotic coverage.

Factors Indicating Severe Pre eclampsia

Diastolic BP ≥ 110 mmHg

Urine albumin persistently 2 plus or more

Obvious fetal growth restriction

Features suggesting imminent end organ damage

Severe PE At 24- 28 Weeks

Expectant management for 48 hours may have a role in selected patients. Strict patient selection criteria should be followed.

Termination could be planned 12-24 hours after second steroid dose. Expectancy may be continued up to a maximum of 5 days at institutional set ups. But it has no maternal advantages and exposes the mother to significant risks.

Severe PE At 28 -34 Weeks

Effective BP control

Seizure prevention

Steroids

Careful maternal and fetal monitoring (clinical and laboratory)

Deliver in 48 – 72 hrs

Severe PE > 34 Weeks

BP control, Seizure prevention and immediate delivery

Criteria to Interrupt Expectant Management

BP $\geq 150/100$ despite treatment

Urine output < 500 ml in 24 hours

Platelet count $< 1,00,0000$ / mm³

LDH > 600 U/L

Progressive increase in liver enzymes

AFI < 5 cm

Absent or reversed umbilical artery Doppler

Headache or visual symptoms

Doing ECHO for patients with severe pre eclampsia irrespective of the gestational age will help us to decide mode of delivery and place of delivery. Knowing the cardiac status we could avoid or manage cardiorespiratory complications effectively.

Oral Antihypertensives

Alpha methyl dopa Class B	500 mg to 1 gm / day divided doses	Safe drug, but slow onset of action. Sleep impairment, letharginess and depression may occur.
Labetalol (Class C)	200-1200 mg / day at 2 or 3 divided doses. Start with 100mg BD	Safe and effective control of BP
Nifedepine (class C)	30-120 mg/day at 3 or 4 divided doses. Start with 10-20 mg oral and repeat after 45 min if needed	Tocolytic.

Acute Control Of Severe Hypertension

Labetalol	IV bolus of 20-40 mg every 10 minutes after checking BP to a maximum of 200mg OR 2mg/min infusion	Safer.
Hydralazine	5-10mg IV bolus every 20 min till BP controlled. If BP not controlled after 20 mg IV consider another drug	Safer.
Nifedepine	10-30 mg oral, repeat after 45 min if needed. Sublingual should not be used.	Though has been in use for long not FDA approved for control of HT. Can be used for rapid control of BP where IV Labetalol or Hydralazine are not available.

Prevention of Convulsions

Magnesium sulphate is the drug of choice for prevention as well as treatment of convulsions in Severe pre eclampsia and Eclampsia.

Mechanism of action:

1. Inhibition of transmission at neuromuscular junction
2. Inhibition of N methyl Daspartate receptors in brain

It is Not Given To Treat Hypertension

PRITCHARD PROTOCOL - Commonly used

Loading dose- 4gm (4 ampules of 50% mgso₄= 8ml) diluted with 12 ml of DW in a 20ml syringe; given slowly over 10 to 15 minutes and followed by 5 gm IM in each buttock.

Maintenance dose 5gm IM every 4 hrs on alternate sites.

Since Indian women have less BMI compared to Western women intramuscular dose could be kept as 4 gm. Continued till 24 hours postpartum or 24 hours after last convulsion.

May cause generalized burning sensation at the time of IV bolus.
Monitor urine output, BP, Pulse rate, SPO₂, Knee jerk.
It is a drug of narrow therapeutic index.

Blood level 4-8 mg/dl	Therapeutic
9-12 mg/dl	Flushing, slurred speech, diplopia, loss of deep tendon reflexes
15-17 mg/dl	Muscle paralysis, respiratory arrest

In case of toxicity 1 gm Calcium gluconate is given IV along with supportive treatment.

Chronic Hypertension And Pregnancy

Women with well controlled BP especially with single drug will do well. About 25% of the patients will develop SUPERIMPOSED PRE ECLAMPSIA.

ECHO is mandatory in women with long standing hypertension.

Drugs should be switched to either methyl dopa or labetalol.



Dr. K. Vanithasri MD (OG),



Important days in Feb & Mar 2019

Feb - 04	World Cancer Day
Feb - 11	World day of the sick
Mar - 08	International Women's Day
Mar - 10	National Immunization day - Polio.
Mar - 14	World Kidney Day
Mar - 24	World TB Day