



**Interdisciplinary Collaquia :  
Women's Health**

**Topic:**

**Being diabetic and Pregnant : Is it safe  
for the Mother and the Baby?  
Medicine Review course 2015**

# Discussion Group

## A/Prof Michelle Jong

- Senior Consultant, Dept of Endocrinology,TTSH
- Visiting Consultant, KKWCH

## A/Prof Tan Lay Kok

- Senior Consultant, Dept of O&G,SGH

## Dr Sufi Muhammad Suhail

- Consultant, Renal Medicine, SGH

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Senior Consultant, General Medicine,TTSH

Visiting Consultant, KKWCH

# Overview

- Case Presentation with MCQs

## Topic discussion:

- Goals of care for the diabetic mother during pregnancy and postpartum
- When to suspect preeclampsia and how can we prevent it?
- Monitoring the wellbeing of the fetus of a diabetic mother.
- Approach to Proteinuria in pregnancy and risks of preeclampsia to the kidney

# Case History

- 38 year female G2 P0, previous miscarriage
- Referred from Polyclinic as she is diabetic and her UPT +.
- Based on her LMP, she is 8 weeks pregnant.
- She is seen by the MO at the antenatal clinic, who gets a history of:
- Type 2 DM diagnosed with hyperlipidemia diagnosed 2 years back on health check up.

# Case History

- She has a family h/o DM, and HT in both her parents and an elder sibling
- Obese : BMI :32
- HbA1c: 9%.
- BP : 120/88
- Followed up by a GP :
- Janumet (50/1000) om, atorvastatin 10 mg on

# MCQ 1

**As the MO in the clinic, You would like to admit her, but she refuses to do so as she is a busy working and cannot take time off. What would you do next ?**

- 1. Order antenatal bloods, refer to Diabetic clinic
- 2. Order antenatal bloods, Stop both medications, refer her back to GP for advice.
- 3. Continue Janumet , stop Atorvastatin and refer her to diabetic clinic
- 4. Call for help.

## Call upon Dr Michelle Jong :

- What advice would she like to give the MO?
- What advice would she give this patient when she sees her in her clinic?
- How would she monitor her progress till delivery?
- Any ante partum or peripartum advice for the obstetrician ?

A pregnant woman in a white lab coat is shown from the chest down, holding her belly with both hands. The background is a soft, out-of-focus light purple and white gradient.

# Diabetes in Pregnancy

## What this is not: Gestational Diabetes

Michelle Jong



## **WHY**

### **Less is less**

#### Early on:

Miscarriage and Birth defects

#### Later on:

Macrosomia and neonatal issues

## **Watch our for**

### Blood glucose control:

Goals of treatment in KKH

Pre-meals 3.5-5.5 mmol/L

Post meals up to 7 mmol/L

### Retinopathy

Baseline and FU as required

### Nephropathy

At Baseline and FU as required

### Blood Pressure

Every Visit

### USS:

due date, birth defects, amniotic fluids and growth

## **HOW**

### **Best Control Blood Glucose:**

Insulin

(actrapid for meals and  
insulatard for basal)

Diet

Exercise

### **Lipids:**

Don't need treatment (unless  
severe high Tg)

### **Hypertension:**

Adalat LA, Methyldopa,  
Labetalol, Prazosin,  
Hydralazine

### **Aspirin**

Before 18 weeks

## **Get it out**

Blood glucose control  
poor  
Retinopathy  
Nephropathy  
Blood Pressure /  
Pre-eclampsia  
Macrosomia

## **Harm to Baby**

### **Immediate**

Hypoglycaemia  
Jaundice  
Polycythaemia  
Respiratory distress  
Hypocalcaemia  
Cardiac arrhythmias

### **Long Term**

1 parent DM before 50; risk  
1:7  
2 Parents DM before 50,  
risk is 1:2

## **PostPartum**

### **Glycaemic Control**

Back to prenatal levels in  
48 hours

### **Breastfeeding**

Insulin/Metformin

### **Contraception**

Any as long as no vascular  
disease  
Pre-pregnancy Counseling  
Clinic

If in doubt:  
Michelle Jong: 81263171

# Case description continued...

Dr Michelle has started her on an Insulin Regime:

- Pre BF: Actrapid 12 units, Insulatard 12 units
- Pre lunch: Actrapid 12 units
- Pre dinner Actrapid 12 units ,Insulatard 12units
- Orders some baseline investigations

# Case description continued..

Patient comes back to see the MO at 12 weeks.

Investigation: done at 10 weeks gestation

- Urine PCR: 0.8,
- Eye screen normal
- Creatinine: 54mmol/L
- Antenatal bloods normal
- O/E : BP: 138/84
- Urine dipstix 2+( albumin and glucose)

# MCQ 2

**What do you think is going on and what would you do?**

1. Patient has developed Pre-eclampsia, start her on methyldopa
2. Patient has underlying DM nephropathy, start her ACEI/ARB
3. High risk for preeclampsia, start her on Aspirin
4. Just get early appointment with Dr Michelle.

# Case description continued..

- The MO decides that this is a high risk pregnancy hence wants the patient to be followed by the Maternal Fetal Medicine clinic



## **May I call upon Dr Tan Lay Kok:**

Enlighten us on:

- Is this Preeclampsia ?
- Is she at high risk for it ?
- How can we prevent it?
- Monitoring the Wellbeing of the fetus?
- Are there any concerns at delivery ?

# Key points

- 38 years
- Para 0
- Pre-existing diabetes
- Obese
- Booking BP 120/80
- 12 weeks 138/84, urine albumin 2+





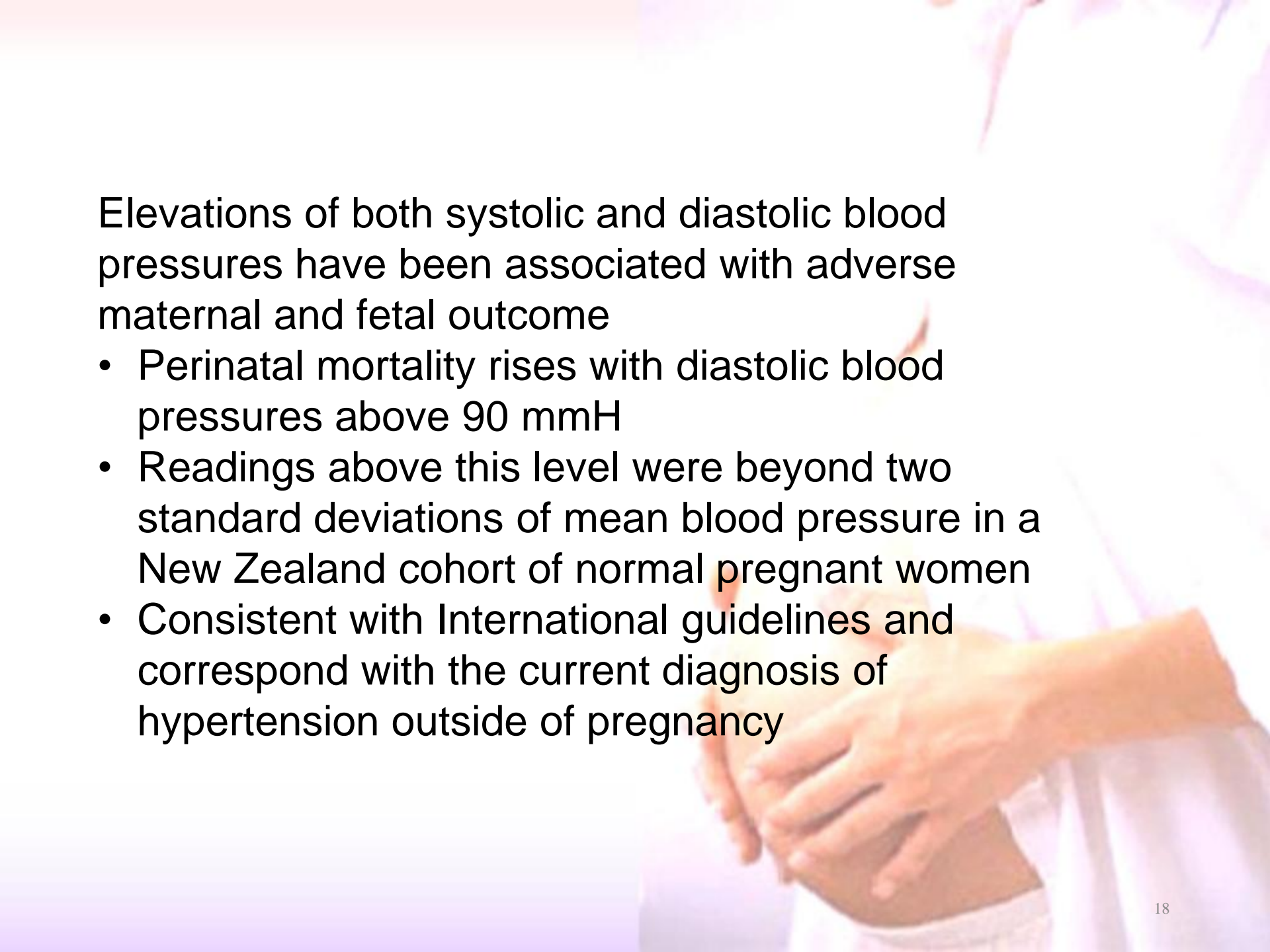
# 1. Definition of hypertension in pregnancy

Normal pregnancy is characterized by a fall in blood pressure, detectable in the first trimester and usually reaching a nadir in the second trimester. Blood pressure rises towards pre-conception levels by term.

Hypertension in pregnancy is defined as:

Systolic blood pressure greater than or equal to 140 mmHg and/or

Diastolic blood pressure greater than or equal to 90 mmHg (Korotkoff 5)



Elevations of both systolic and diastolic blood pressures have been associated with adverse maternal and fetal outcome

- Perinatal mortality rises with diastolic blood pressures above 90 mmHg
- Readings above this level were beyond two standard deviations of mean blood pressure in a New Zealand cohort of normal pregnant women
- Consistent with International guidelines and correspond with the current diagnosis of hypertension outside of pregnancy

# Classification of hypertensive disorders in pregnancy

- Preeclampsia – eclampsia
- Gestational hypertension
- Chronic hypertension
  - essential
  - secondary
  - white coat
- Preeclampsia superimposed on chronic hypertension

# Definition of preeclampsia

- **Preeclampsia** is a multi-system disorder unique to human pregnancy
- Characterised by hypertension and involvement of one or more other organ systems and/or the fetus.
  - Raised blood pressure is commonly but not always the first manifestation.
  - Proteinuria is the most commonly recognised additional feature after hypertension but should not be considered mandatory to make the clinical diagnosis.
  - As this classification is based on clinical data, it is possible that women with another condition will sometimes be classified incorrectly as having preeclampsia during pregnancy.

# Preeclampsia

- A diagnosis of preeclampsia can be made when hypertension arises after 20 weeks gestation
- Accompanied by one or more of the following signs of organ involvement:
  - **Renal involvement**
    - Significant proteinuria –a spot urine protein/creatinine ratio  $\geq 30\text{mg}/\text{mmol}$
    - Serum or plasma creatinine  $> 90 \mu\text{mol}/\text{L}$
    - Oliguria:  $<80\text{mL}/4 \text{ hr}$

# Preeclampsia

## • **Haematological involvement**

- Thrombocytopenia  $<100,000 /\mu\text{L}$
- Haemolysis: schistocytes or red cell fragments on blood film, raised bilirubin, raised lactate dehydrogenase  $>600\text{mIU/L}$ , decreased haptoglobin
- Disseminated intravascular coagulation

## **Liver involvement**

- Raised serum transaminases
- Severe epigastric and/or right upper quadrant pain

# Preeclampsia

- **Neurological involvement**

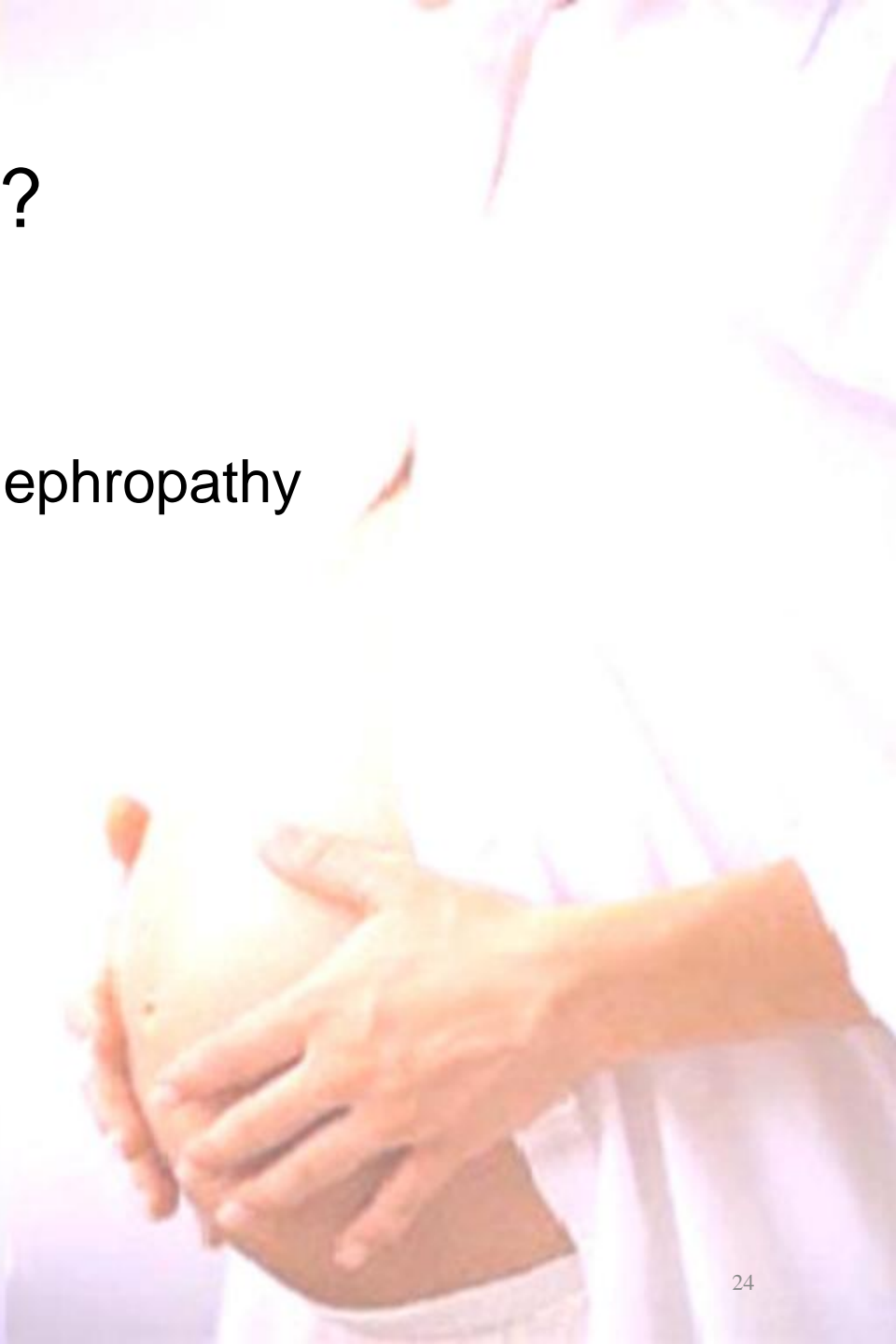
- Convulsions (eclampsia)
- Hyperreflexia with sustained clonus
- Persistent, new headache
- Persistent visual disturbances (photopsia, scotomata, cortical blindness, posterior reversible encephalopathy syndrome, retinal vasospasm)
- Stroke

- **Pulmonary oedema**

- **Fetal growth restriction (FGR)**

# Is this pre-eclampsia?

- At 12 weeks, NO
- Need to consider diabetic nephropathy
- Exclude UTI





# Is she at high risk of developing preeclampsia?

- YES!



# Risk factors for preeclampsia

- 38 years ✓
- Para 0 ✓
- Pre-existing diabetes ✓
- Obese ✓
- Booking BP 120/80
- 12 weeks 138/84, urine albumin 2+ ✓

# Can we prevent preeclampsia

- Low dose aspirin
  - Start early
- Weight management

## **Answer to the MCQ 2:**

3. Patient has high risk of Preeclampsia, start her on Aspirin

# Fetal wellbeing

## The Issues

- Miscarriage
- Fetal anomaly
- Abnormal fetal growth
  - Macrosomia
  - Fetal growth restriction
- Polyhydramnios
- Stillbirth
- Birth injury
  - Shoulder dystocia, brachial plexus injury, asphyxia
- Neonatal complications
  - RDS
  - Biochemical: hypoglycaemia, hypocalcaemia, jaundice

# Fetal wellbeing

## Monitoring The Issues

- Miscarriage
- Fetal anomaly
- Abnormal fetal growth
  - Macrosomia
  - Fetal growth restriction
- Polyhydramnios
- Stillbirth
- Birth injury
  - Shoulder dystocia, brachial plexus injury, asphyxia
- Neonatal complications
  - RDS
  - Biochemical: hypoglycaemia, hypocalcaemia, jaundice

Euglycaemia  
Hba1c  
<6.1%

# Fetal wellbeing

## What worries me?

- Miscarriage
- Fetal anomaly
- **Abnormal fetal growth**
  - Macrosomia
  - Fetal growth restriction
- Polyhydramnios
- **Stillbirth**
- Birth injury
  - Shoulder dystocia, brachial plexus injury, asphyxia
- Neonatal complications
  - RDS
  - Biochemical: hypoglycaemia, hypocalcaemia, jaundice

# Fetal wellbeing

## What keeps me awake for next 24 years?

- Miscarriage
- Fetal anomaly
- Abnormal fetal growth
  - Macrosomia
  - Fetal growth restriction
- Polyhydramnios
- Stillbirth
- Birth injury
  - Shoulder dystocia, brachial plexus injury, asphyxia
- Neonatal complications
  - RDS
  - Biochemical: hypoglycaemia, hypocalcaemia, jaundice

# Delivery Issues

- Timing
- Mode of delivery
- CTG monitoring
- Be prepared for shoulder dystocia
- Sugar control
- Neonatology standby





# Maternal Issues

- High risk of preeclampsia
- Elective preterm birth
- High risk of requiring LSCS
- Obesity related complications
- Thromboembolism risk



# MCQ 3

At 18/52, nurse calls you for advice and shows you the CBG chart:

Target blood glucose: premeals <5.5mmol/L  
: Post meals <7mmol/L

fasting	Post BF	Pre lunch	Post lunch	Pre dinner	Post dinner	Bed-time
6.5	7.4	5.2	8.5	5.5	7.2	3.2
6.8	7.0	4.8	7.8	6.0	6.4	3.4

## What changes to her Insulin regime would you suggest?

1. Increase her pre breakfast Actrapid and Prelunch Actrapid
2. Increase her prelunch Actrapid, reduce her predinner Insulatard
3. Increase her pre breakfast insulatard and pre dinner Insulatard
4. Increase her Prelunch Actrapid and decrease her predinner Actrapid

fasting	Post BF	Pre lunch	Post lunch	Pre dinner	Post dinner	Bed-time
6.5	7.4	5.2	8.5	5.5	7.2	3.2
6.8	7.0	4.8	7.8	6.0	6.4	3.4

Target blood glucose: premeals <5.5mmol/L  
: Post meals <7mmol/L

fasting	Post BF	Pre lunch	Post lunch	Pre dinner	Post dinner	Bed-time
6.5	7.4	5.2	8.5	5.5	7.2	3.2
6.8	7.0	4.8	7.8	6.0	6.4	3.4

**Answer:**

2. Increase her prelunch Actrapid, reduce her predinner Insulatard

## Case Description continued .....

- She has been coming for all her follow up with the Diabetic clinic and her Obstetrician
- Her 20 week fetal scan is good with no fetal anomalies.
- Her Hba1c repeated at 21/52 is 6.9%.
- Her blood sugar control is good although her post-prandials are high at times and her Insulin regime is being adjusted accordingly at the diabetic clinic on a 3 weekly basis.

## Case Description continued .....

- Her BP monitored at home is below 140/90.
- Medications:  
Aspirin 100mg om, Insulin, Ranitidine for reflux

### **At 30/52 gestation follow up:**

- BP : 160/105, Pedal edema,
- Urine Dipstix 3+ albumin,

## MCQ 4:

Now you are sure that patient has developed Preeclampsia .

**Which one of the following anti HT is not recommended in Pregnancy?**

- 1. Nifedipine LA
- 2. Hydralazine
- 3. Prazosin
- 4. Atenolol

## Drug doses for oral treatment of hypertension in pregnancy

Drug	Class	Initial dose	Usual effective dose range	Maximum total daily dose
Methyldopa	Centrally acting alpha-agonist	250 mg two to three times daily, increase every two days as needed*	250 to 1000 mg in two to three divided doses	3000 mg
Labetalol	Combined alpha- and beta-blocker	100 mg two times daily, increase by 100 mg twice daily every two to three days as needed	200 to 800 mg in two divided doses	2400 mg
Nifedipine extended release*	Calcium channel blocker	30 to 60 mg once daily as an extended release tablet, increase at 7 to 14 day intervals	30 to 90 mg once daily	120 mg
Hydralazine <b>NOTE:</b> Due to reflex tachycardia, monotherapy with oral hydralazine is not recommended; hydralazine may be combined with methyldopa or labetalol if needed as add-on therapy	Peripheral vasodilator	Begin with 10 mg four times per day, increase by 10 to 25 mg/dose every 2 to 5 days	50 to 100 mg in two to four divided doses	200 mg <sup>A</sup>

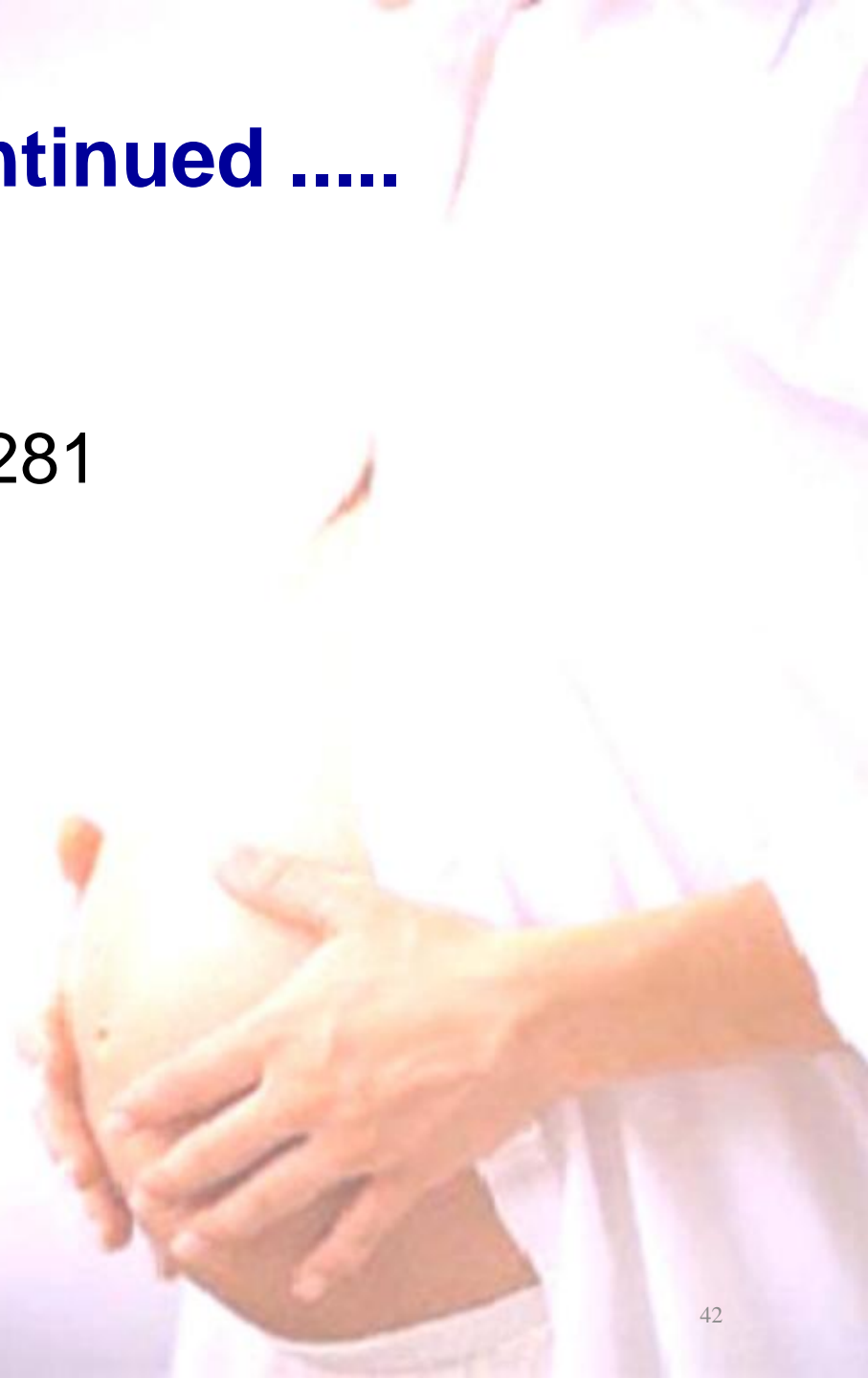


## Case Description continued .....

- She was admitted for BP monitoring, started on methyldopa 500mg bd.
- 2 doses of Dexamethasone given for fetal lung maturity
- Blood sugars did rise but managed with additional doses of Insulin.
- Growth scan: no macrosomia, SDS AC:-0.22, AFI : 5.8

## Case Description continued .....

- 24 hour UTP :2.91g/day,
- Hb: 12.3 g/dl, Platelets :281
- Creatinine: 56
- AST:33
- ALT:10
- UA 351
- ALB 24,Bilirubin normal
- PT/INR :normal



# Case Description continued...

- Discharged in 2 days with optimal BP control and is advised to monitor her BP at home and watch out for symptoms of any impending eclampsia.
- At 32 weeks :During her follow up in 1 week there is significant oedema and BP in clinic at 160/100 ,urine dipstix:4+
- She is admitted . Labetalol 100 mg tds.
- US fetal scan: AFI 6.6,EFW;1860,SDSAC-0.61

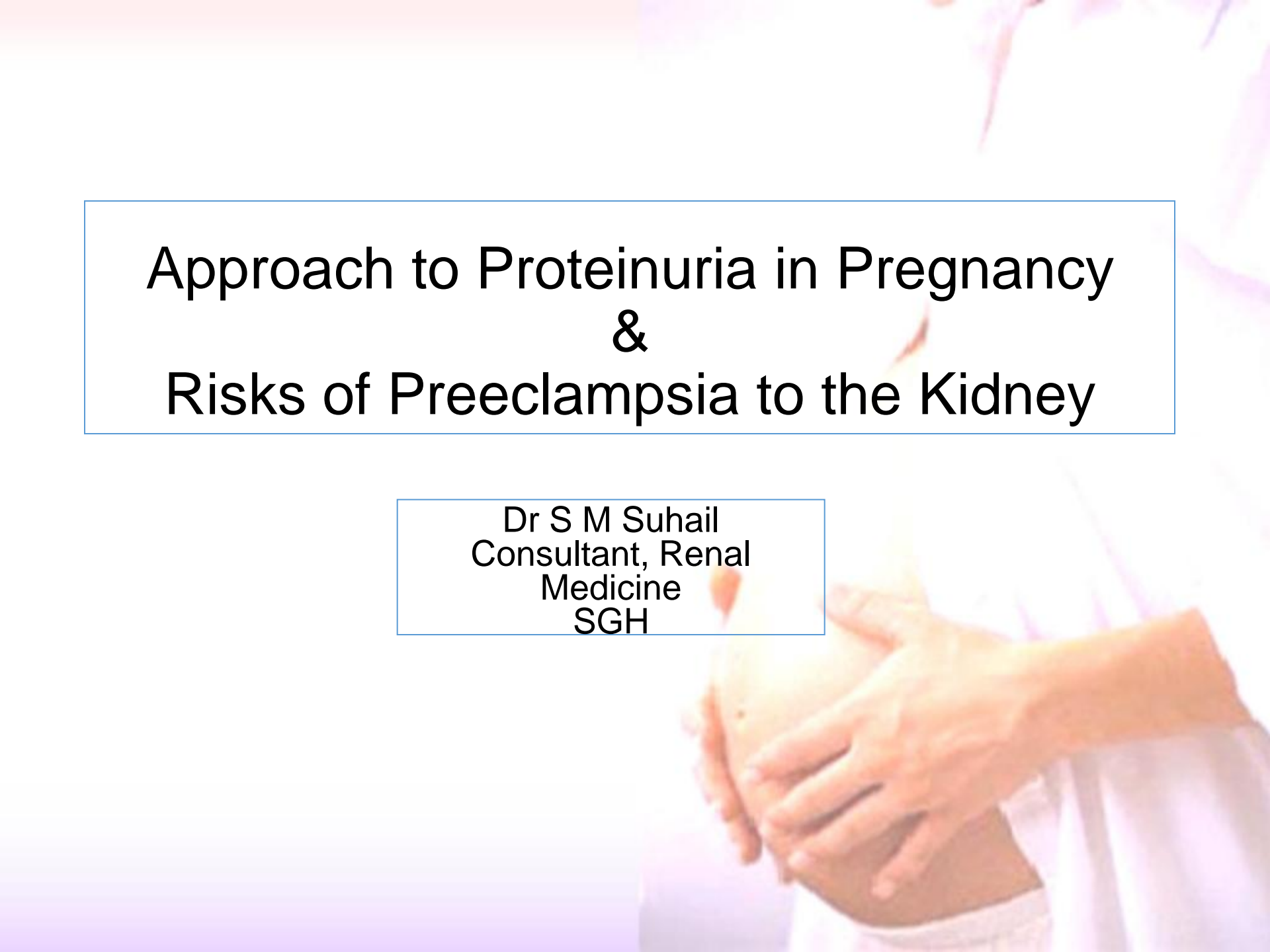
# Case description continued...

## Blood investigations:

- Hb 11.2 g/dl. Platelets: 230-183-165
- PT/INR: normal
- AST/ALT: normal to slightly raised
- Uric Acid: 430, Creatinine: 70 mmol/L
- 24 hr UTP: 7.48 gm/day
- Albumin:17
- Bilirubin : 9

# Case Consult continues

- Renal consult is done.
- Is this truly Preeclampsia? Should we consider any other diagnosis? Should we start her on steroids?
- May I call upon Dr Suhail from SGH Renal.
- **Approach to Proteinuria in pregnancy and risks of Preeclampsia to the kidney.**



# Approach to Proteinuria in Pregnancy & Risks of Preeclampsia to the Kidney

Dr S M Suhail  
Consultant, Renal  
Medicine  
SGH

# Renal Consult

- **Is this truly Preeclampsia?**
- **Should we consider any other diagnosis?**
- **Should we start her on steroids?**
- **Risks of preeclampsia to the kidney**
  - 32 weeks gestation
  - UTP 7.48 gm, increased from 2.9 gm, and oedema
  - BP 160/100 on Labetolol
  - No HELLP
  - Uric acid 430 from 351  $\mu\text{mol/l}$
  - Creatinine 70 from 56  $\mu\text{mol/l}$

# A case of proteinuria, pregnancy and preeclampsia

MANAGEMENT ISSUE  
DIAGNOSTIC ISSUE  
FOLLOW-UP ISSUE

- Obviously
  - Management comes first
    - For safety of mother and the fetus,
  - Delivery cures preeclampsia.
- If not
  - Eclampsia and maternal + fetal risk.





## Diagnostic issue--

- Is this truly Preeclampsia?
- **Should we consider any other diagnosis?**
- Should we start her on steroids?
- Risks of preeclampsia to the kidney
  - 31 weeks gestation
  - UTP 7.48 gm, oedema and DM for 2 years
  - BP 160/100 on Labetolol
  - No HELLP
  - Uric acid 430 from 351  $\mu\text{mol/l}$
  - Creatinine 74 from 56  $\mu\text{mol/l}$

# Diagnostic issues- proteinuria in pregnancy.

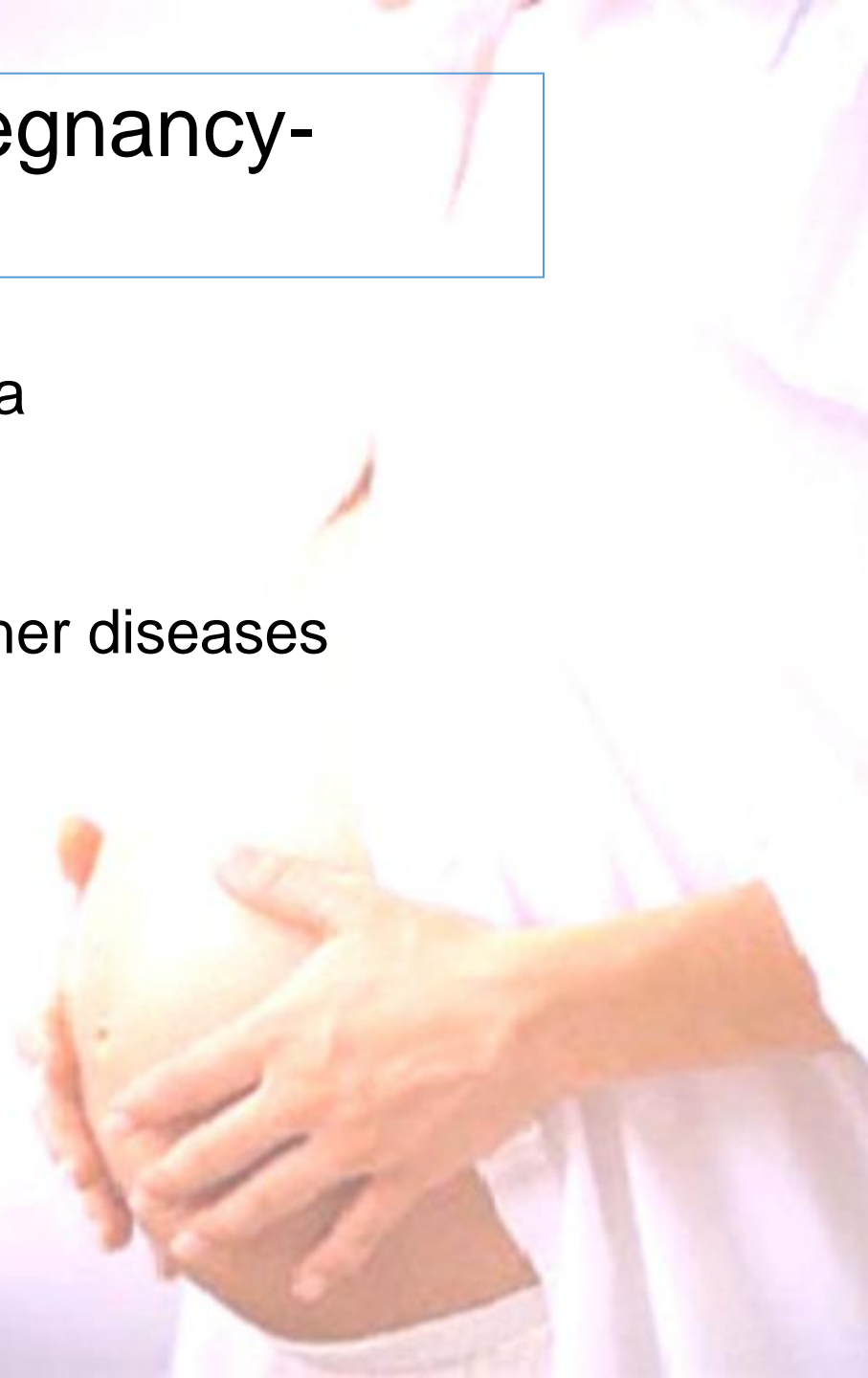
- Protein-to-creatinine ratio ~ 24 hrs  
UTP
  - UPCR >3.0 g/g ~ UTP>3.0 g/24 hr
  - UPCR< 0.2 g/g ~ UTP< 0.2 g/24 hr.
- In pregnancy, this is not true
  - Haemodynamic alterations lead to
    - variation of protein excretion on hourly basis  
in relation to creatinine.
  - 24 hours estimation is gold standard.

# Proteinuria in general- causes

- Primary Glomerulonephritis
- SLE/Secondary glomerulonephritis and vasculitis
- Diabetic nephropathy
- Transplant glomerulopathy
- Multiple myeloma/Amyloidosis/Paraproteinaemia
- Other causes
  - Orthostatic, CCF, exercise induced, UTI, chyluria etc

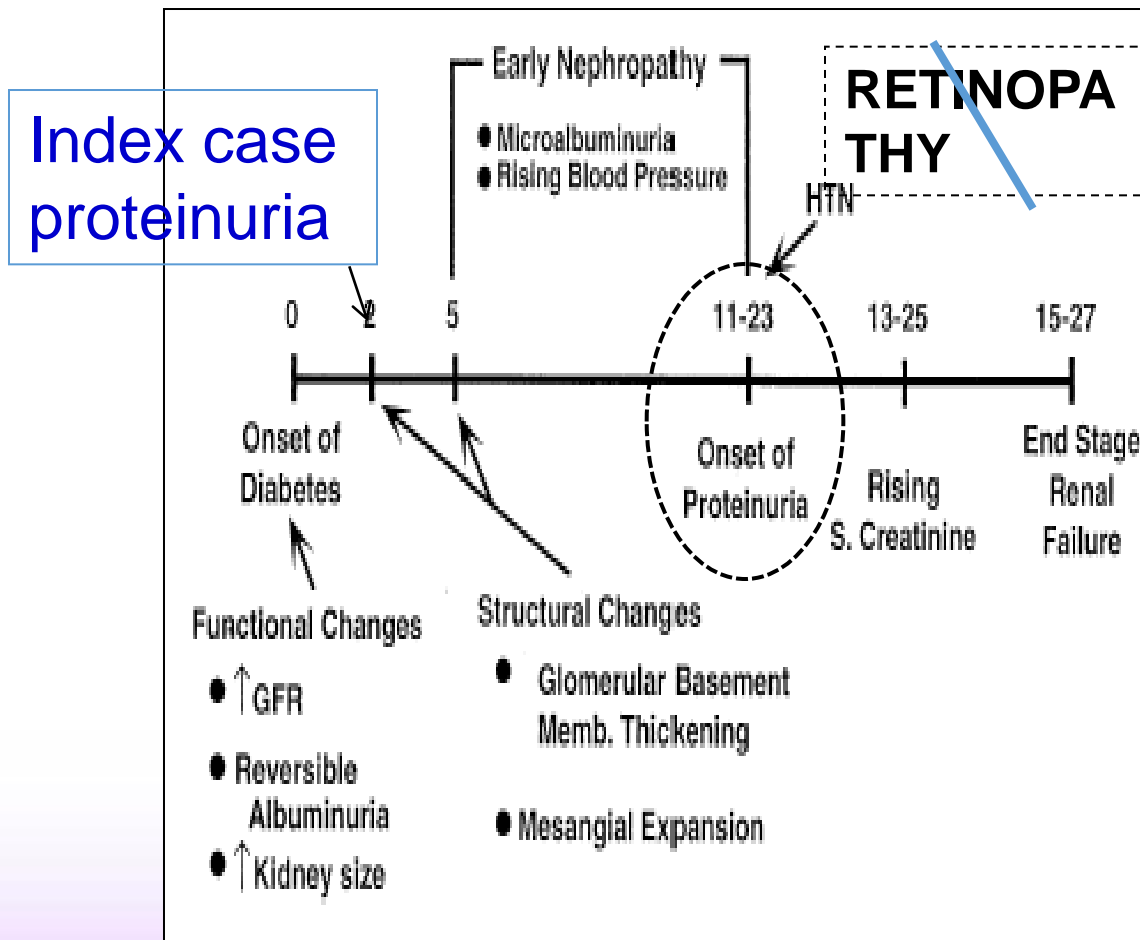
# Proteinuria in pregnancy- causes

- Gestational proteinuria
- Preeclampsia
- Glomerulonephritis,  
primary/secondary/other diseases
  - Pre-existing
  - New onset
- Diabetic nephropathy
- UTI
- Physiological



# Diabetic nephropathy

- Natural history of diabetic nephropathy



# Diabetic nephropathy ... Audience response

- Is this a case of diabetic nephropathy?
  1. Yes
  2. No
  3. Not sure

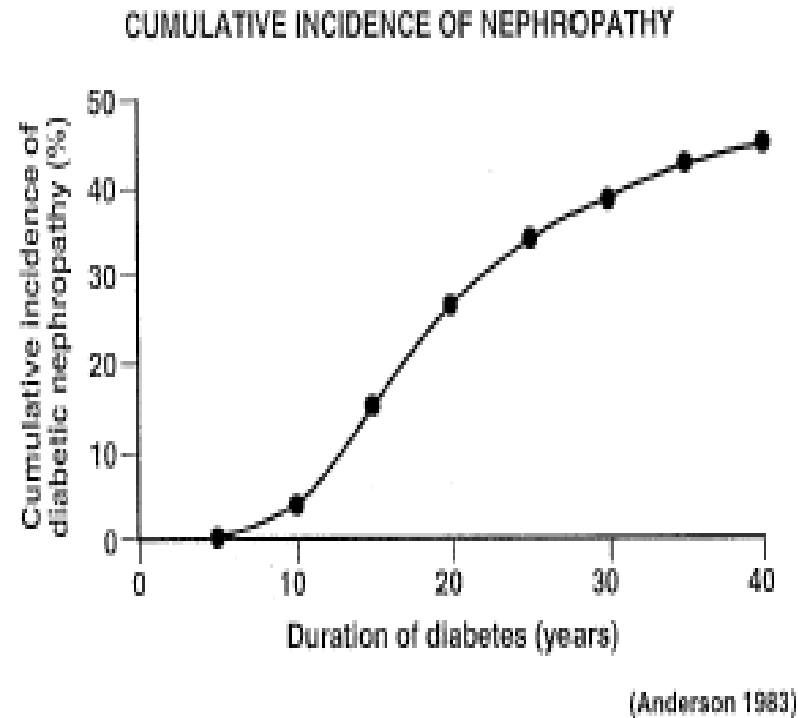


# Diabetic nephropathy

Definition of diabetic nephropathy<sup>1</sup>:

- Estimated GFR (eGFR)
  - $<60$  mL/min/1.73 m<sup>2</sup>,
- Kidney damage
  - albuminuria  $>300$  mg/g creatinine.
- Retinopathy

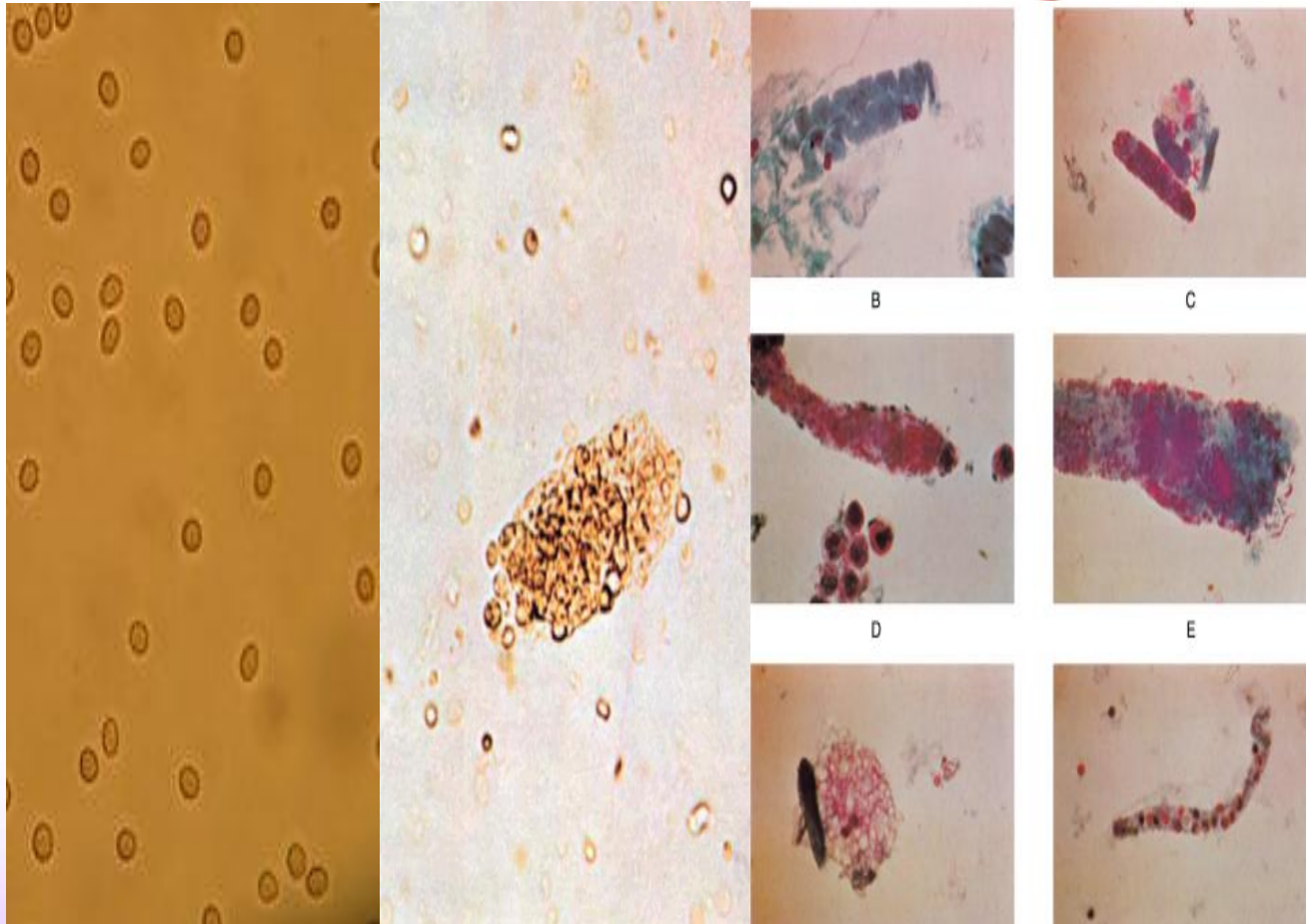
(*Microalbuminaemia*:  
albuminuria creatinine ratic  
30 - 300 mg/g)



**1. Diabetic Kidney Disease: A Report From an ADA Consensus Conference.**  
*Diabetes Care* October 2014 vol. 37 no. 10 2864-2883

# Glomerulonephritis in pregnancy

- Urinalysis
  - Dysmorphic RBC with/without granular cast is the hallmark of GN





# Glomerulonephritis in pregnancy...

- Primary Glomerulonephritis
- SLE- lupus nephritis flaire
- Secondary glomerulonephritis and vasculitis
- Worsening of Preexisting GN



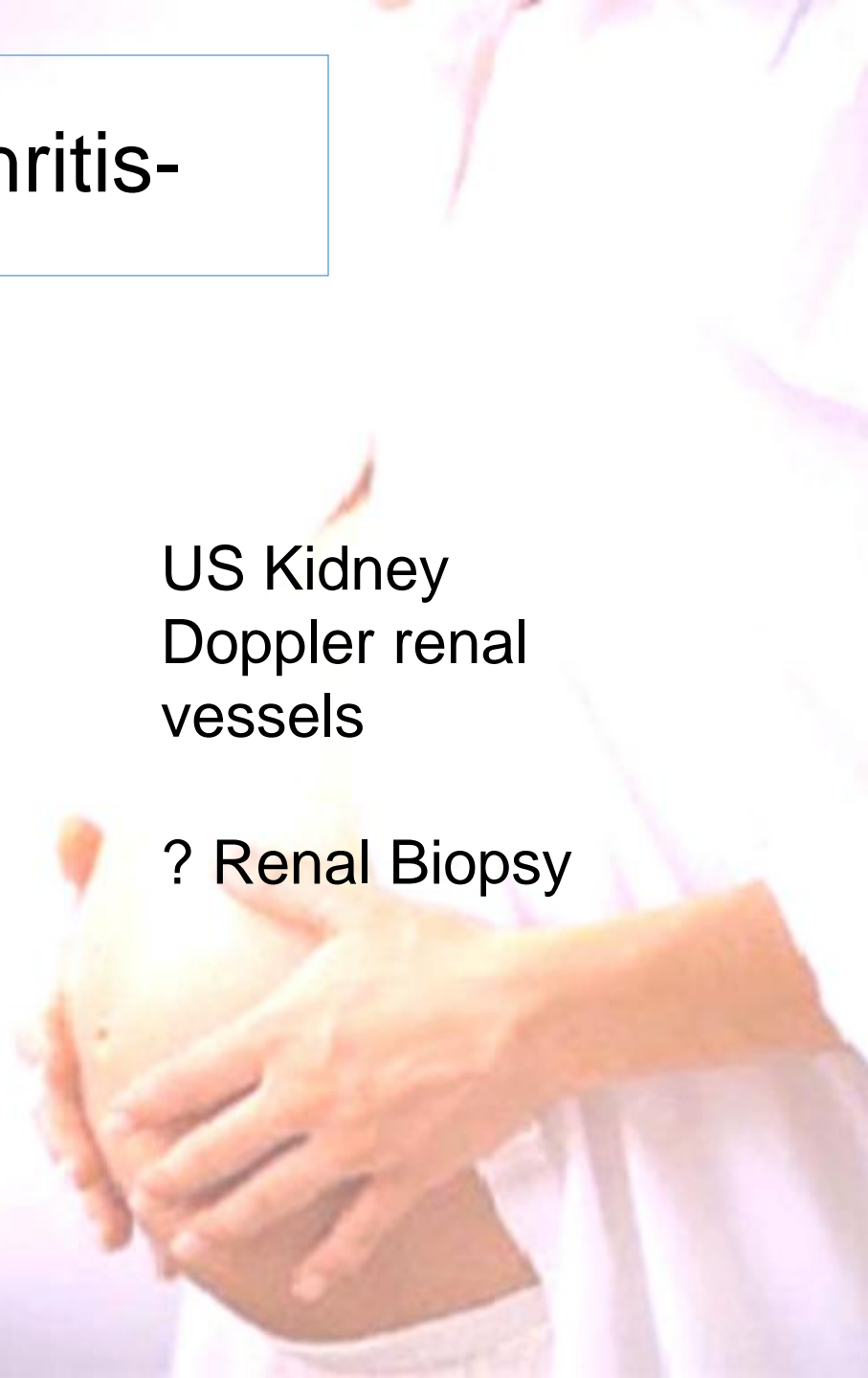
# Glomerulonephritis-

## Relevant investigations

- 24 hours Urine protein
- Immunological
  - ANA/Anti DS-DNA/ANCA
  - Anti GBM
  - C3, C4, CH50
  - Anti Phospholipid Ab
  - HBsAg/AntiHCVAb/HIV screen
  - Myeloma screen

US Kidney  
Doppler renal  
vessels

? Renal Biopsy



# Increase of proteinuria in pregnancy-

- Early preeclampsia (proteinuria less than 5g)
  - Proteinuria is not mandatory for preeclampsia (ACOG current guideline<sup>2</sup>)
- Progression to preeclampsia
- Worsening of GN

## Case series<sup>3</sup>

- Proteinuria cases followed up in Pregnancy:
  - 33% of cases developed preeclampsia
  - Less than 0.3% cases were gestational proteinuria
  - Remaining were not biopsied antenatal, managed as GN with biopsy deferred postpartum

2. [www.acog.org/Task Force and Work Group Reports/Hypertension in Pregnancy](http://www.acog.org/Task_Force_and_Work_Group_Reports/Hypertension_in_Pregnancy).

3. Ekiz A, et al. J Matern Fetal Neonatal Med. 2015 Jul 28:1-5

# Glomerulonephritis-

## Presentation

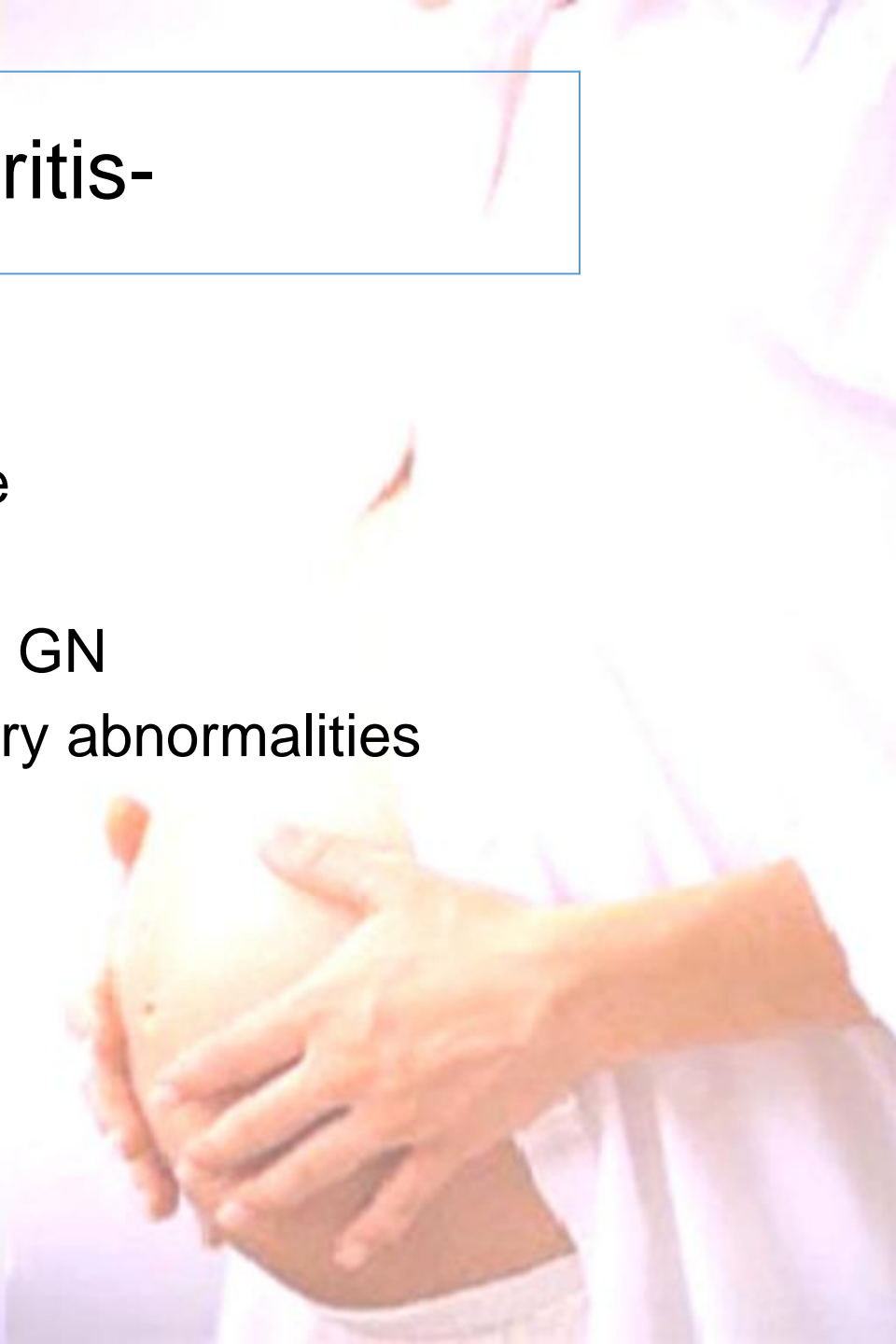
- Nephrotic syndrome
- Nephritic syndrome
- Rapidly progressive GN
- Asymptomatic urinary abnormalities

## RENAL BIOPSY

Light microscopy

Immunofluorescent

Electron microscopy



# Renal Biopsy in pregnancy

- Multitude of difficulties
- Relative contraindication, particularly in the third trimester.

## A Case Series<sup>4</sup>--

- 18 renal biopsies in pregnancy.
  - 15 antepartum period and 3 postpartum
  - Classic glomeruloendotheliosis of preeclampsia confirmed in 5.
  - Complications:
    - 7 renal hematomas
    - 2 patients required blood transfusion.
    - 4 intrauterine fetal deaths - presumed that none were a result of the biopsy.

# Steroid in pregnancy--

- Is this truly Preeclampsia?
- Should we consider any other diagnosis?
- **Should we start her on steroids?**
- Risks of preeclampsia to the kidney
  - 31 weeks gestation
  - UTP 7.48 gm, and oedema
  - BP 160/100 on Labetolol
  - No HELLP
  - Uric acid 430 from 351  $\mu\text{mol/l}$
  - Creatinine 74 from 56  $\mu\text{mol/l}$

# Should we start her on steroids?

## Case report in MRI renal unit<sup>5</sup>:

- Nephrotic syndrome suspected during pregnancy
- UTP of 26 gm at 3<sup>rd</sup> trimester
  - With renal biopsy contraindicated
  - Urine protein selectivity test,
    - a largely discarded test
    - predicting steroid-responsiveness of nephrotic syndrome,

$$SI = \frac{C_{\text{HMW}_{\text{PR}}}}{C_{\text{LMW}_{\text{PR}}}}$$

$$SI = \frac{U_{\text{HMW}_{\text{protein}}}}{S_{\text{HMW}_{\text{protein}}}} \times \frac{S_{\text{Alb}}}{U_{\text{Alb}}}$$

SI <0.2 → steroid-responsive nephrotic syndrome

>0.2 → steroid-non-responsive

# Steroid and immunosuppressant for GN

- Steroid was started (SI<0.2)
- NS went into remission during the pregnancy
- Preeclampsia and fetal complications were prevented.
- Other Immunosuppressive medicines like Cyclosporine, Tacrolimus, Mycophenolate mofetil and Azathioprine are safe to continue in pregnancy.



# Renal Consult--

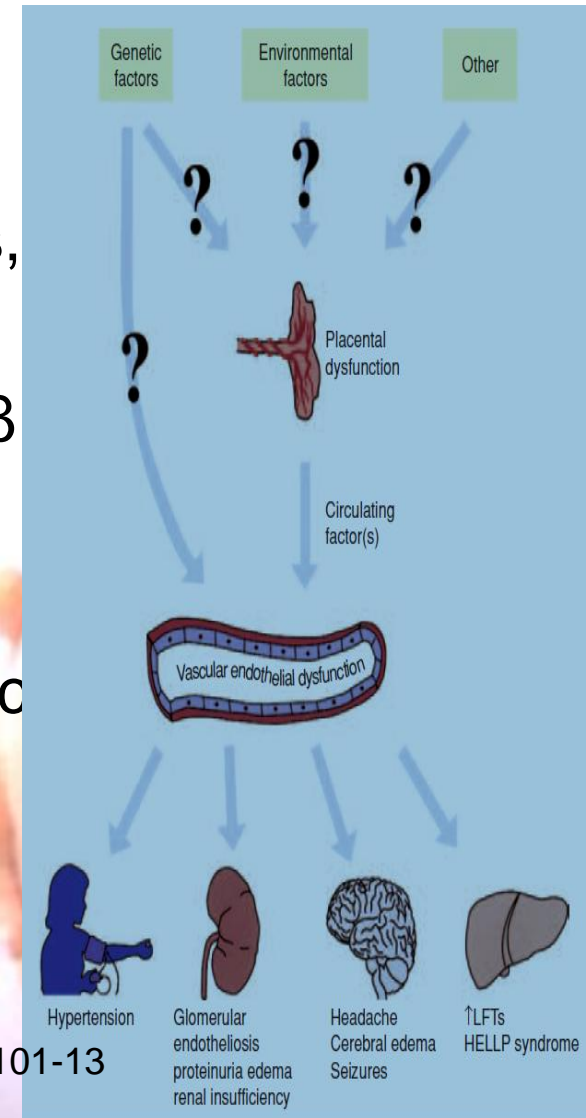
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# Pregnancy and kidney

- Renal length increases by 1 to 1.5 cm
  - Physiologic dilatation of the ureters
  - Hydronephrosis
- Marked alterations in renal haemodynamics:
  - GFR and renal plasma flow (ERPF) increase by 50%
  - Protein excretion (TPE) and albumin excretion (UAE)
    - increase after 20 weeks gestation.
  - Estrogen and progesterone and prostaglandin E2, elevated.
- eGFR – not representative of true clearance
  - MDRD eGFR underestimates by >40 ml/min
  - CCG eGFR overestimates by >20 ml/min
- Gold standard is 24 hours urine mGFR

# Preeclampsia and kidney

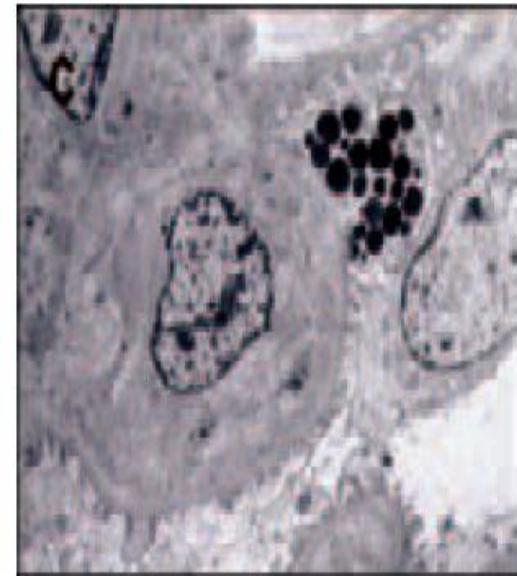
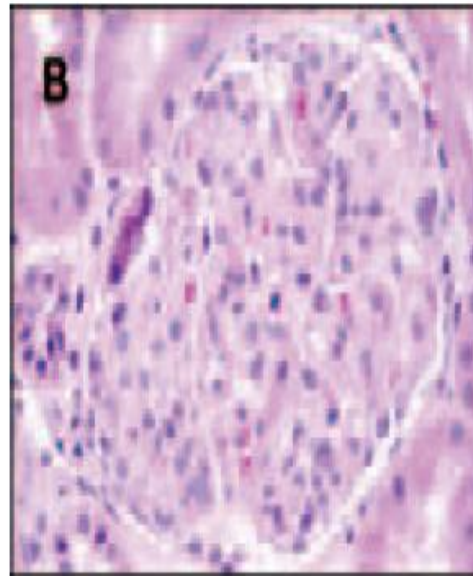
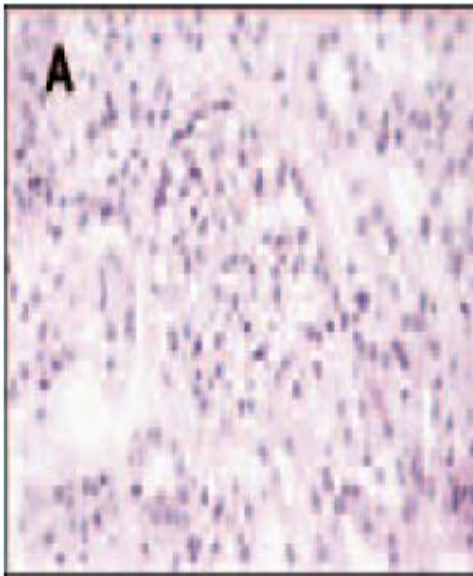
- Placental dysfunction, ↓
- Antiangiogenic and other factors, into the maternal circulation ↓
- Impaired VEGF/PlGF and TGF- $\beta$  signaling, ↓
- Endothelial dysfunction ↓
- Preeclampsia and other systemic effects.



# Preeclampsia and renal pathology- Glomerular endotheliosis

## Case report<sup>7</sup>:

- Biopsy at 33 weeks with UPCR of 26 gm/gm showed glomerular endotheliosis instead of glomerulonephritis



# Effects of Preeclampsia on kidney

- Glomerular capillary Endothelial dysfunction leads to proteinuria and thrombotic microangiopathy.
- Patient with mild renal impairment, normal BP, and little or no proteinuria have good maternal and fetal outcome,
- Patient with a serum creatinine  $>2.5$  mg/dl:
  - $>40\%$  develop preeclampsia, preterm delivery, and
  - $>33\%$  likelihood of decline in renal function
- Proteinuria can persist after pregnancy in patients with preeclampsia, therefore follow up by nephrologist is needed.

# Follow up post pregnancy- For proteinuria

*In a long term observational study:*<sup>8</sup>

- 463 patients with preeclampsia with proteinuria
- Proteinuria persisted in 34 women (0.7 %) after pregnancy
  - 71% were diagnosed with underlying renal disease (MGN, MPGN, IgAN, FSGS).
  - 29% were diagnosed with idiopathic preeclampsia glomerular endotheliosis

# Proteinuria and pregnancy- Conclusion

- Persistent proteinuria is a predictor of underlying renal disease.
- All patients with preeclampsia should be evaluated with respect to continuing proteinuria, persistent hematuria, or impaired renal functions after postpartum period.
- Percutaneous renal biopsy should be performed in these patients post natal.

# Case Description continued .....

- Patient is delivered at 32 weeks by caesarean section in view of the Severe Preeclampsia
- BW: 1735 gms, No neonatal hypoglycaemia Baby was in neonatal care for 2 weeks





# Concluding remarks

Being diabetic and Pregnant : Is it safe for the Mother and the Baby? : YES

## **1. Pre-pregnancy counselling:**

DM (HbA1c <6.1%) and no significant end organ damage, safety of medications

## **2. Ante-natal :**

Good DM control

Monitoring of the fetus

Watch out for complications such as Preeclampsia

## **3. Postpartum advice :**

contraception and planning for the next pregnancy

Thank you

