EYE EXAM DURING PREGNANCY

Presenter: Munkhsaikhan.M MD
Affiliated Bolor Melmii eye hospital of MNUMS
Pregnancy

- Many emotional and physical changes including eyes
Overview

- Normal eye changes in pregnancy
- Pregnancy induced chorioretinopathy
- Retinal diseases that are affected by pregnancy
Normal eye changes in pregnancy

**Cornea**
- Increase thickness
- Increase curvature
- Decrease sensitivity

**Lens**
- Increase thickness
- Increase curvature

**IOP**
- Decrease in 3\textsuperscript{rd} trimester
How about retina?

Retina

- **Retinal thickness**
  - slightly increases during 2nd-3rd trimesters

- **Retinal venous diameter**
  - decreased during the 3rd trimester

1. Dinn, Robert B. BS*; Harris, Alon MSc, PhD†; Marcus, Peter S. MD‡. Ocular Changes in Pregnancy. Obstetrical & Gynecological Survey:
   February 2003 -Volume 58 -Issue 2 -pp 137-144
2. The effect of pregnancy on retinal hemodynamics in diabetic versus nondiabetic mothers *
   Lisa S Schocket, MD*, Juan E Grunwald, MD*, , Amy F Tsang, MA*, Joan DuPont* American Journal of Ophthalmology
   Volume 128, Issue 4, October 1999, Pages 477–484
EARLY PREG -> HYPERDYNAMIC CIRCULATION
CONTROLLED BY AN AUTOREGULATORY
MECHANISM IN THE RETINAL VASCULATURE

- **Success**
  not develop retinopathy

- **Failed**
  Increased blood flow velocity
  potential damage to capillary endothelium

2. Pregnancy induced chorioretinopathy
Pregnancy induced chorioretinopathy

- Central serous chorioretinopathy (CSCR)
- Valsava retinopathy
- Purtscher’s retinopathy
- Preeclampsia/ eclampsia associated retinopathy (HT retinopathy)
- RAO, RVO
- Bullous ERD
Pregnancy induced chorioretinopathy: CSCR

10:1 MALE PREDOMINANCE OUTSIDE THE CONTEXT OF PREGNANCY
CLOSURE WHEN WOMEN BECOME PREGNANT

Pregnancy induced chorioretinopathy: CSCR

**CSCR**

- unilateral
- with or without fibrin formation

**Most cases**

- occurred during the 3rd trimester
- recurring in subsequent pregnancies


Pregnancy induced chorioretinopathy: CSCR

**INVESTIGATIONS**

- **OCT**
- **FA/ICG**
- **CSCR**

- spontaneously resolved during the early postpartum
- not associated with any adverse fetal outcomes C/S Rx conservatives
Pregnancy induced chorioretinopathy
: Valsalva retinopathy

- UNILATERAL OR BILATERAL SELF LIMITING
- INCREASED INTRA-THORACIC OR INTRAABDOMINAL PRESSURE
- sharp rise in the intra-ocular venous pressure
- rupture of superficial retinal capillaries

Constipation/delivery
NO SPECIFIC TREATMENT IS NEEDED

- Laser posterior hyaloidotomy
- the diagnosis should be made only after excluding other causes of retinal haemorrhages
Pregnancy induced chorioretinopathy

: Purtscher’s retinopathy

- (reported) developing after child birth
- Preeclampsia/eclampsia
- compliment activated leuko-embolus formation?

No treatment is needed
Pregnancy induced hypertensive
CLASSIFICATION OF HYPERTENSION IN PREGNANCY

- **Chronic HTN**: HTN present before the 20th week of pregnancy or that present before pregnancy.

- **Chronic HTN with superimposed Preeclampsia**: defined as proteinuria developing for first time during pregnancy in a woman with known chronic HTN.

- **Gestational HTN**: HTN without proteinuria developing after 20wks of gestation during labor or the peripartum in previously normotensive non-proteinuric woman.
- **Preeclampsia**: Gestational HTN asso with proteinuria.
- **Eclampsia**: Convulsions occurring in apt with preeclampsia.
- **HELLP Syndrome**: Severe form of preeclampsia char by
  - hemolysis (abnormal PBS, bil > 1.2mg/dl)
  - thrombocytopenia (platelets<1lakh/mm3)
  - elevated liver enzymes (AST>70, U/L, LDH>600 U/L)
MODIFIED SCHEIE CLASSIFICATION OF "HYPERTENSIVE RETINOPATHY":

- Grade No changes
- Grade 1 - Barely detectable arterial narrowing
- Grade 2 - Obvious arterial narrowing with focal irregularities
- Grade 3 - Grade 2 plus retinal hemorrhages and/or exudates
- Grade Grade 4 - 3 plus disc swelling
Retinopathy in Pregnancy Induced Hypertension (PIH)

- **HOW COMMON**
  - 25% of the patients with preeclampsia 50% with eclampsia
  - Mostly asymptomatic
  - Few suffers visual disturbance
  - Blurred vision, diplopia, photopsia, scotomata, amaurosis and chromatopsia and cortical blindness

Dieckmann WJ (1952) The toxemias of pregnancy, 2nd edn. Mosby, St Louis
COMMON OCULAR FINDINGS

- Focal/ general constriction or spasm of the retinal arterioles
- CWS
- intra retinal haemorrhages, retinal edema
- optic nerve edema

CHOROIDAL INVOLVEMENT

- yellow-white focal lesions at the level of the RPE
- serous retinal detachment
  - often bullous
  - usually bilateral
- Elschnig’s spots
  - small, isolated areas
  - Hyperpigmentation
  - surrounding yellow or red halos

Retinopathy in Pregnancy Induced Hypertension (PIH)

PROGNOSIS

- Good
- Generally do not need specific treatment
- But NEEDS Systemic treatment
- Antihypertensive therapy early delivery of the fetus when indicated

3. Retinal diseases that are affected by pregnancy
II. Retinal diseases that are affected by pregnancy

- pre-existing DM
- Preexisting posterior uveitis
Changes in hemodynamics
increased level of various growth factors and hormones
DR may start / progress during pregnancy
**DR and pregnancy: Duration of diabetes**

<table>
<thead>
<tr>
<th>DM DURATION</th>
<th>DR Progression</th>
</tr>
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<tbody>
<tr>
<td>&lt;15 yrs</td>
<td>18%</td>
</tr>
<tr>
<td>&gt; 15 yrs</td>
<td>39%</td>
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</tbody>
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THE DIABETES IN EARLY PREGNANCY STUDY (DIEP)

- Prospective cohort
- 140 pregnant diabetic women
- Retinopathy was most likely to progress in
  - Poorest control at baseline
  - Largest improvement during early pregnancy

Additionally hazardous during pregnancy

In at least one major study,

- all patients with severe PDR
  - also had proteinuria indicating a generalized vasculopathy

Diabetic retinopathy in patients with eclampsia/preeclampsia is more likely to progress

DR and pregnancy: Other factors

RAPID NORMALIZATION OF SUGAR LEVEL

- hypoglycemia
- retinal hypoxia and
- new CWS and intra retinal microvascular abnormalities

RISK FACTORS FOR THE DR PROGRESSION

- Duration of DM
- Poor metabolic control
- Baseline severity of DR
- HT, PIH and preeclampsia
- Rapid normalization of glucose levels during pregnancy

DR and Pregnancy: Management

- Early education and good counselling of diabetic women in childbearing age
- Good glucose control
- Treat diabetic retinopathy prior to conception
DR and Pregnancy: Management

DR THAT PROGRESS DURING PREGNANCY
COMMONLY REGRESS AFTER DELIVERY
BUT SOMES WITH RAPID PROGRESSION OR HIGH-RISK PDR

will progress
Can cause VH/ TRD/ NVG/ blindness

Should be treated

Retinal diseases that are affected by pregnancy

Uveitis

- May flare-up in disease activity within the 1st trimester. And then slow down later.
- Rebound within 6 months of delivery.

non-infectious uveitis

Retinal diseases that are affected by pregnancy

**Uveitis**

- **MOST COMMON**
  - VKH and Behcet’s disease
  - Most flare-ups were effectively treated with observation/corticosteroids

Common things to look for in pregnant with visual problem

CENTRAL SEROUS CHORIORETINOPATHY (CSCR)

Valsava retinopathy
Purtscher’s retinopathy
Preeclampsia/ eclampsia associated retinopathy
(HT retinopathy)
pre-existing DM
preexisting posterior uveitis
STAY HEALTHY!!!
THANK YOU.