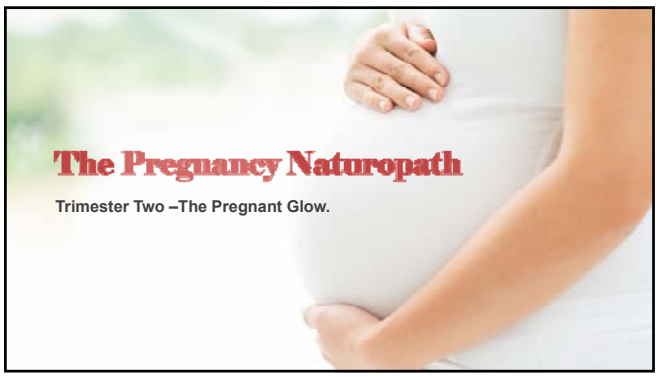


Trimester Two (Week 13-28)

- Maternal Changes
- Foetal changes
- Testing
- Pre eclampsia
- PUPP
- Cholestasis

Maternal Changes

- Pregnancy glow.
- Movements are felt: flutters, swirling, kicking.
- Placenta has taken over hormone production from corpus luteum:
  - Progesterone =relax smooth muscle, placental immunosuppressant, inhibit breast milk secretion, role in brain development.
  - Oestrogen =stimulates uterine growth, and breast development.
  - Relaxin = flexibility of pubic symphysis, prepares to dilate cervix for labour. Increase flexibility -caution with stretching /yoga etc..
- GIT motility reduces: decrease rate of absorption, increase risk of constipation.
- Less production of HCL in stomach and reduced space.

(21)

Maternal Changes cont.

- Bleeding gums –check oral health, Vitamin C, Bioflavonoids, gargle; probiotics, raspberry leaf, pink salt.
- Metallic taste –zinc ++
- Stretch marks –collagen demands, vitamin C -3g, zinc ++, vitamin E, EFA's. topically; vitamin E base + Centella asciatica, Calendula off.
- Breast growth & development –final maturity stage, cease underwire bra, lumpy ?Iodine deficiency.
- Lower abdominal aches -ligaments stretching, uterine growth.
- Vaginal secretions increase and pH changes –thrush.
- Insomnia –sleep hygiene, cushion support, herbs –California poppy, Lavender, Withania (avoid T1, <12g/d), Lemon balm, Chamomile, Passionflower, Oats.
- Increase susceptibility to infections: colds, flu, UTI's: Immune regulation – probiotics, vitamin D, vaginal GBS –Echinacea, vit C, bioflav, iron.

(21)

Foetal Changes

- Classed as a baby from 20 wks. gestation.
- Foetus has developed all organs and systems, focus is on size and weight growth. Increase protein demands: total intake 1.4g/kg. smoothie etc.
- Neurological growth & development –EFA,s, B vitamins, Choline. Reduce toxin exposure, good maternal fats & protein (neuromuscular development).
- Teeth development /small bones –inner ear: Ca/Mg, Vit C, Vit K. (esp. family history of deafness)
- 26-28 wks.: haemodilution peak –check Iron: increase demand bc of tissue growth, rbc mass, Hb production). Low iron =increase bleeding risk. (refer to anaemia in pregnancy). Discuss probiotics in relation to allergy management. Baby is starting to hear sounds: talking & singing, music, meditations etc.. (21). **Labour talk.**

Testing

- Check T1 tests and results.
- Trimester Two specific:
  - Iron: see anaemia in pregnancy. Ferritin is tested routinely but may need Iron studies.
  - FBC /FBE: Haemoglobin will be re checked.
  - Vitamin D: not done as part of a pregnancy screen, deficiency common in newborns.
  - Iodine: spot urine test, deficiency is common.
  - FG or GTT: Glucose check done between 24-28 wks. gestation as a Gestational Diabetes screen. HbA1C if history of gestational or type 2 diabetes.

  Optional
  - Thyroid Assessment: concerned and if not done T1.
  - Zinc: Copper (Cu): ratio
- Screening: Quad test, Amniocentesis, Morphology scan.

Morphology Scan

- Routine 18-20 wks. gestation.
- Good views: foetus larger in size, mobile, uterus is raised out of pelvis.
- Dating: not as accurate as T1 scan. Can be out by +/- 7-10 days.
- Check for multiples –twins, triplets.
- Sex
- Foetal organs and structure. –further Ix or TOP.
- Placental position –placenta praevia
- Cervical Measurement.

Pre Eclampsia

- >20/40
- Hypertension: systolic >140 mmHg and/or Diastolic > 90mmhg.
- And Proteinuria: >300 mg protein/day.
- Blood pressure usually returns to baseline post delivery.
- Eclampsia = seizures in a women with pre-eclampsia.
- Incidence = 3.0–3.3%
  - Early onset (<34 weeks) pre-eclampsia as 0.4%
  - Late-onset (≥34 weeks) pre-eclampsia as 2.4%

(1)

Predisposing Factors & Pathophysiology

- Primipara: <20yrs, >40yrs, Increased BMI, Family Hx PET, multiple pregnancy, insulin resistance, pre-existing dx (chronic HT, renal dx, autoimmune dx, antiphospholipid sx, diabetes.) (2)

Sequelae

- Vasoconstriction =reduced perfusion of organs.
- Increased coagulation =micro thrombi.
- Reduced circulating plasma volume =oedema, reduced nutrient delivery etc..
- Associated with –hypercholesterolaemia –oxidative stress –inflammation –hyperhomocysteinaemia.
- Increased risk of maternal/foetal morbidity and mortality.

(3)

Treatment

- Healthy weight prior to conception & exercise =ideal. (weight management T1)
- Avoid excess caloric intake: esp. Trans Fats /Sat Fats.
- Encourage good fibre (constipation T3).
- Check BP every visit.
- Potassium rich foods: diets high in K (>4.1 g/d) significantly reduced risk of pre-eclampsia compared to low K diets (<2.4 g/d) (4)
- **Homocysteine:** elevated Hcy =abnormalities with placental vasculature increasing risk of pregnancy loss & pre-eclampsia. check levels, supplement B6, B9 & B12, consider MTHFR status. (5)

Treatment:
Lower BP

- Magnesium –16% of women with PE have significantly lower magnesium levels than those with a normal pregnancy. (6)
- Magnesium citrate –300mg/d from 25/40 prevented a rise in blood pressure at weeks 35 & 37 compared to placebo. (7)
- 360mg of Mg decreased the risk of preeclampsia by 34% compared to a placebo.(6)
- Magnesium (400-750mg/day) = vascular tone and reactivity, improve endothelial function, reduce insulin resistance, NM relaxant, helps bind K ions to cell membrane.(8)

Treatment cont.

- Calcium: infant skeleton holds approx. 20-30g Calcium. 80% acquired in T3 with the rapidly mineralizing foetal skeleton. (9)
- Serum Calcium = approx. 1% circulating calcium.
- Evidence from 13 studies (involving 15,730 women) that calcium supplementation of >1g/d during pregnancy may be a safe way of reducing the risk of gestational hypertension +/- pre-eclampsia by 30%. (10)
- Ca: Mg Ratio 2:1, 1:1. & foods.

Treatment cont.

- Omega 3 (2g/day)= compared to controls, pre-eclamptic women had significantly lower placental DHA, and omega-3/omega-6 ratios. (11)

  Benefits
  - Omega 3 fatty acids esp. DHA: reduce placental oxidative stress. (11)
  - anti-inflammatory, antioxidant, vasodilation, stimulate NO pathway, reduced platelet & leukocyte reactivity.
- Studies based on dietary omega 3 validated. More specific studies required on supplementation of fish oil.

Treatment cont.

- Vitamin D (1,000-4,000IU) : women with lower serum vitamin D levels = greater risk of developing pre-eclampsia. (12). Immune response & regulation TH1 & TH2 balance. Infants vit D related to mums for first 3-4 months.(12)
- L-Arginine (up to 4g/d) =studies showing supplementation of 3-4g/day significantly decreased BP (use esp. if high risk, other Rx not working. (13)(14)(15)

Reduce Oxidative Stress

- Increased os = increased vascular endothelial damage, peripheral vascular resistance & platelet aggregation. (16)
- Lower rate of preeclampsia after antioxidant supplementation in women with low antioxidant status. (17)
- Beta-carotene (10-30mg), Zn (40-80mg), Vitamin C (1-3g/d) , vitamin E (400IU). CoQ10 (150mg) & Se (200-400mcg) high risk.

Herbal Medicine

Antihypertensive
- Crataegus spp (Hawthorn berry & leaf)
- Viburnum opulus (Cramp bark)
- Viburnum prunifolium (Black Haw)

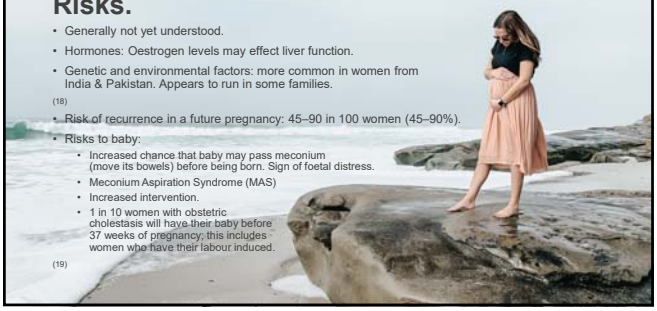
Nervine
- Passion Flower
- Oats seed
- Skullcap
- Vervain
- Zizyphus

Adaptogens (see T1 –Fatigue)

Obstetric Cholestasis

- Reduced bile flow causing a build-up of bile acids causing itching of the skin, with no visible rash. Symptoms resolve after childbirth. (16)
- Presentation: usually >28/40 -generalised itch –esp. palms & soles, tends to be worse at night. jaundice if severe, 20% mild jaundice, +/- dark urine, pale stools, recurrent UTI's. N&V. (17)
- Incidence: <1 in 100 mums to be. More common if Indian or Pakistani origin. (17)
- Common in: EBV, T1 hyperemesis, history of high E2, Gilberts Sx.

Obstetric Cholestasis – Causes & Risks.



- Generally not yet understood.
- Hormones: Oestrogen levels may effect liver function.
- Genetic and environmental factors: more common in women from India & Pakistan. Appears to run in some families.

(18)

- Risk of recurrence in a future pregnancy: 45–90 in 100 women (45–90%).
- Risks to baby:
  - Increased chance that baby may pass meconium (move its bowels) before being born. Sign of foetal distress.
  - Meconium Aspiration Syndrome (MAS)
  - Increased intervention.
  - 1 in 10 women with obstetric cholestasis will have their baby before 37 weeks of pregnancy, this includes women who have their labour induced.

(19)

Obstetric Cholestasis – Investigations

- Liver function tests (LFTs): Increased ALT, bilirubin, GGT.
- Bile acid test: usually raised, even if LFT's normal. –very high levels linked to stillbirth. (20)
- Blood tests to rule out causes of other liver problems. Symptoms may be present for days, or weeks, before blood tests become abnormal.
- LFTs usually repeated every 1–2 weeks.
- An ultrasound scan can check for liver abnormalities and gallstones.

Obstetric Cholestasis – Treatment

- Increased monitoring during pregnancy and labour.
- St Mary's Thistle - tablets preferred –avoid alcohol. 3-4 divided doses. Take away from Iron. Glycetract –MediHerb.
- Choline –reduce bile acids
- Vitamin K: reduce small risk of heavy bleeding post partum.
- Antioxidants: Vitamin C & E, Zn, CoQ10, ALA.
- review methylation.
- Liver friendly foods –bitter greens, dandelion, cruciferous vegetables.
- Rest, cool oatmeal baths, wearing loose-fitting cotton clothing, sit in front of a fan, and press ice packs to affected areas for short periods.
- Aloe Vera gel.
- Avoid OCP post partum.

(21)

PUPP (Pruritic Urticarial Papules and Plaques of Pregnancy)

- Most common rash in pregnant women
- Most common with Primipara (1st time pregnancy), & Multiple pregnancies.
- Commences in abdominal stretch marks, small red wheals that spread over thigh, buttocks, breast, neck & arms. (does not involve belly button).
- Theories around hormones, weight gain, sweating etc., common - Zinc: Copper issue.
- Testing
  - Serum or plasma Zn
  - Serum Cu
  - ? Krypto pyrrole status (abnormal Hb synthesis & metabolism – excess amounts of zinc & b6 urinary excretion- HPL bind Zn & B6 – Caeruloplasmin –Urinary pyrroles /HPL <10 mcg/dL =Normal, 10-15 mcg /dL =borderline, >15 mcg/dL =Pyrroluria.

(21)

PUPP – Treatment

- Zinc picolinate 60 mg.
- P5P 50mg + B complex.
- EPO 1g BD and EFA's EPA>DHA.
- Herbs: Nettle leaf, Oat straw, Licorice (low dose), Passion flower, adaptogens.
- Topical: Oatmeal bath, herbal cream –calendula, Echinacea, chickweed, gotu kola, chamomile. Aloe Vera gel. Infused oil –St John's wort. Paw ointment. Cotton clothing. Natural shampoo, detergent, soap etc..

(21)

Thank You

- I love supporting women through pregnancy and new motherhood, and I would love you to do the same.
- Thankyou for your time in learning how to support women holistically in pregnancy.
- It is super important work that needs to be done to enable women to birth & mother with confidence, and achieve the childbirth experience they desire.
- Please join me on…
  LinkedIn: Carmen Farrugia
  Facebook: The Pregnancy Naturopath
  Instagram: @ThePregnancyNaturopath

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