ANAEMIA AND PREGNANCY

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INTRODUCTION

- MAJOR PUBLIC HEALTH PROBLEM WORLD-WIDE

DEFINITION

- ↓ CIRCULATING Hb BASED ON THE AGE AND SEX OF THE INDIVIDUAL
NORMAL VALUES (g/dl)

- Adult female 11.5 – 16
- Adult male 13.0 – 18
- Neonate 17.0 – 22
- Children (3-12M) 10.5 – 12
- Children (>1 yr) 12.0 – 13
CLASSIFICATION

1. AETIOLOGY
   MAINLY:
   - EXCESSIVE BLOOD LOSS
   - EXCESSIVE DESTRUCTION OF RBC (HEMOLYSIS)
   - PROBLEMS WITH FABRICATION
2. MORPHOLOGY

- MACROCYTIC
  - MEGALOBLASTIC
  - NON-MEGALOBLASTIC

- HYPOCHROMIC, MICROCYTIC

- NORMOCYTIC, NORMOCHROMIC
PATHOPHYSIOLOGY

- ROLE OF Hb=O₂ TRANSPORT FROM LUNGS TO TISSUES, THUS, DECREASE CAUSES TISSUE HYPOXIA, RESPONSIBLE FOR ALL MANIFESTATIONS OF ANAEMIA
CASE OF IRON DEFICIENCY
ANAEMIA

- TOTAL IRON: 3.5 – 5g NORMAL ADULT
- DAILY LOSS: 1 mg (men) & 2mg/day (Women)
- DAILY NEEDS: 1mg/day
- ↑ NEED DURING PREGNANCY/BREASTFEEDING
- ↑ ABONDANT MENSTRUATION
- ↑ DURING GROWTH (Fe levels low at birth b/c only cumulated during the 3rd trimester)
- Fe INGESTED AS FERRIC IRON
- BUT, REDUCED TO FERROUS FORM
- THEN ABSORPTION UPPER INTESTINE
- BINDS TRANSFERRINE, TRANSPORT
CASE OF IRON DEFICIENCY ANAEMIA - 2

SITUATIONS LEADING TO Fe DEF.:
- NUTRITIONAL DEFICIENCY IN Fe
- MALABSORPTION OF Fe
- ↑ NEED FOR Fe (Growth; Pregnancy)
- EXCESSIVE LOSS OF Fe (Hemorrhage)
- INADEQUATE UTILISATION OF Fe (sideroblastic.; Hbinopathies, chronic diseases; parasitic infections -ankylo...)

CASE OF FOLATE DEFICIENCY

Physiology

- TOTAL FOLATE = 10mg (MAINLY AS POLYGLUTAMATE FORM)
- DAILY NEEDS = 100ug
- DAILY LOSSES = 13ug
- ALL FORMS ABSORBABLE - DUODENUM AND UPPER JEJUNUM; ABSORPTION NORMAL IN ABSENCE OF GIT DISEASE
CASE OF FOLATE DEFICIENCY

SOME SITUATIONS LEADING TO DEF.:
- NUTRITIONAL DEFICIENCY
- MALABSORPTION
- INCREASED NEED (PREGNANCY, HAEMOLYSIS)
- INCREASED LOSS (HEMODIALYSIS, HEART FAILURE…)
- ANTI-FOLATES (DRUGS, ALCOHOL)
ANAEMIA & PREGNANCY

Physiology:
- IMP. IN PLASMA VOL. > 6 WEEKS
- MAXIMUM VOL. AROUND 24th WEEK
- ↑ RESULT = DILUTIONAL ANAEMIA
- ↑ ALSO OF RBC MASS BY 17 -25% DUE TO ACCELERATION OF ERYTHROPOIESIS DURING PREGNANCY
- PLASMA VOL. NORMALIZES 1-3 WEEKS > DELIVERY
**IRON & PREGNANCY:**

- PROGRESSIVE ↓ IN SERUM IRON
- - DURING NORM. PREGNANCY, 750mg Fe LOST:
  - 400mg=FOETUS
  - 150mg=PLACENTA
  - 200mg=DELIVERY & BREASTFEEDING
- In addition to normal Fe loss each day
- THUS, CLOSE PREGNANCIES...beware!!!
- ↑ RBC MASS → ↑NEED FOR Fe, ↑↑↑ IN PREMATURE
- THUS, IF Fe DEF.+ DILUTION → SEVERE ANAEMIA
PREVENTION OF Fe DEF. ANAEMIA
- Fe requirement in pregnancy = 2.5 mg/day
- In 3\textsuperscript{rd} trimester = 3 – 7.5 mg/day
- Fe loss from lactation: 0.5 –1mg/day

These cannot be obtained from food absorption alone, thus:

Fe SUPPLEMENT NEEDED:
- 200mg elementary Fe each day (Fe sulphate; gluconate or fumarate)
FOLATE DEFICIENCY & PREGNANCY DURING PREGNANCY:

- ↑ FOETAL REQUIREMENTS
- NUTRITIONAL DEF. (CAPRICES WITH FOOD, LOW SOCIO-ECON. LEVEL…)
- INCREASED NEED IN 3rd TRIMESTRE & AFTER DELIVERY
PREVENTION OF FOLATE DEFICIENCY

- FOLATE NEED = ↑ BY 100 – 300 ug/day
- THUS, SUPPLEMENTS IMP.
- SEVERAL SCHOOLS:
  - TO ALL WOMEN DURING 3rd TRIMESTER
  - TO ALL WOMEN THROUGHOUT PREGNANCY
  - ONLY TO WOMEN WHO BECOME VERY ANAEMIC
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DOSES FOR FOLIC ACID

2 SCHOOLS:

- 100ug/day
- AT LEAST 5mg/day
IMPACT OF ANAEMIA ON PREGNANCY & FOETUS

• MAY AFFECT THE PREGNANCY OUTCOME, WITH \( \uparrow \) INCIDENCE OF:
  – ABRUPTIO PLACENTA
  – UTERINE BLEEDING
  – RARELY ERYTHROBLASTOPENIA
  – BACTERIURIA

• MAY AFFECT FOETAL OUTCOME:
  – PREMATURITY
  – LOW BIRTH WEIGHT
  – FOETAL MALFORMATIONS
WHAT TO RETAIN

- ANAEMIA VERY FREQUENT HERE
- PHYSIOLOGICAL IN PREGNANCY, BUT SUPPLEMENTS NEEDED B/C I NEEDS
- PREGNANT WOMEN ARE NOT EXEMPT FROM OTHER CAUSES OF ANAEMIA IN NON-PREGNANT WOMEN NE QU’UNE MANIFESTATION DE MALADIE. CAUSES SHOULD BE DIAGNOSED AND MANAGED APPROPRIATELY
- IMPACT ON FOETUS MAY BE SEVERE
- BUT, AS SEEN, THE NUTRITIONAL ANAEMIAS ARE PREVENTABLE.
THANK YOU FOR YOUR ATTENTION