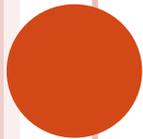


PEDIATRIC ANEMIA

UCI-CHOC Medical Student Lectures



WHAT IS ANEMIA?

- Infants: polycythemic (Hgb>14) at birth, then physiologic nadir around 2 months of age (6-9weeks), dips to Hgb 10
- Children: Lower range of normal Hgb can be calculated for < 10 yo by the following:
 - $11 + (0.1 \times \text{Age})$, i.e. 3 yo = 11.3
 - Lower range of Hgb > 10 yo = 12
- Adolescents: Lower range of normal = 13-14



TYPES OF ANEMIA

- Macrocytic (MCV >100)
- Normocytic (MCV 80-100) – think blood loss vs. anemia of chronic disease
- Microcytic (MCV <80)



QUICK REVIEW: MACROCYTIC ANEMIA

- Medications (esp. AEDs, immunosuppressants)
- Vitamin B12 (goat's milk) or folate deficiency
- Liver disease
- Diamond-Blackfan anemia
- Hypothyroidism
- Aplastic anemia



QUICK REVIEW: MICROCYTIC ANEMIA

- Iron deficiency – MOST COMMON
- Thalassemia
- Lead poisoning
- To determine difference between iron deficiency and thalassemia: Mentzer Index = MCV/RBC
 - If < 13 , more likely thalassemia (production normal)
 - If > 13 , more likely iron deficiency anemia (production is decreased)



IRON DEFICIENCY ANEMIA

- Low everything: Serum iron, ferritin, transferrin %
- Typical causes: Not enough intake / lots of cows milk (>24oz daily)
- High iron sources: Cream of wheat, liver, prune juice, spinach, cereals, beef, ham, lamb, etc.
- After Dx: 3-6mg/kg/day total elemental iron supplement (take with Vit C); Hgb should rise >1 in 4 weeks; continue for 2 months after normalization of hemoglobin to replete stores



THALASSEMIA

- Low Hgb and low retic count
- Dx: Hemoglobin electrophoresis
- Beta thal major
 - Usually well at birth, symptoms arise in second six months of life: Pallor, irritability, jaundice, HSM, chipmunk facies
 - Can see aplastic crisis (Parvo B19)
- Alpha thal (Hgb H disease)
 - Dramatic left shift of oxygenation curve
 - Hemolytic anemia throughout gestation, symptomatic at birth
 - HSM, indirect hyperbili, elevated LDH, reduced haptoglobin
- Rx for both: Chronic transfusions



LEAD POISONING

- Sources: Ingestion vs. inhalation
 - Chips of paint, lead dust, glazed pottery, water from lead plumbing, herbal/folk medications, imported crayons and toys, jewelry
- Toxic levels: Anything $>5\text{mcg/dL}$
 - BLL >10 can cause cognitive and behavioral problems
- Rx
 - >45 chelation therapy (Succimer or Ca EDTA)
 - >70 chelation therapy (Succimer and Ca EDTA)



LABS TO GET WITH EVERY ANEMIC PATIENT

- Full CBC – want to make sure other cell lines aren't down
- Reticulocyte count
- Iron studies
- +/- based on history: UA, LDH, hemoglobin electrophoresis



RESOURCES

- Richardson M. Microcytic Anemia. Pediatrics In Review.
<http://pedsinreview.aappublications.org/content/28/1/5>
- Segel GB, Hirsch MG, Feig SA. Managing Anemia in Pediatric Office Practice: Part 1. Pediatrics In Review.
<http://pedsinreview.aappublications.org/content/23/3/75>
- Segel GB, Hirsch MG, Feig SA. Managing Anemia in Pediatric Office Practice: Part 2. Pediatrics In Review.
<http://pedsinreview.aappublications.org/content/23/4/111>

