Nothing to Declare

Laboratory Values in the Elderly

Sodium (Na)

- Hypernatremia

_ >150 Nmol/L

- Usually due to dehydration
  - Older persons may have inadequate compensatory mechanisms of thirst and oliguria in the face of fluid deprivation.
  - ~20 – 30% of elderly will be dehydrated

_ Infection, fever, diarrhea, and cerebrovascular accidents

Hyponatremia

-Na <135nmol/L

-most common electrolyte disturbance in elderly.

~10-20% of patient's in geriatric units will have hyponatremia

- Can be due to disease and drugs
- Associated with cancer, treatment with diuretics, amitriptyline, phenothiazine, congestive heart failure, SIADH, primary polydipsia

  Tricyclic antidepressants, clofibrate, haloperidol, serotonin reuptake inhibitors, opiates

  Schizophrenia, acute psychosis, brain atrophy, CVA's, surgical and emotional stress

Diabetes – major cause of hypnatremia

Potassium (K+)

- Levels remain constant from young adulthood through middle age after which age related increase occurs (>60 y/o)
- ~30% of long tern care geriatric patients may have K+ abnormalities.
- Alkalosis, insulin, and beta-2 agonists, can cause hypokalemia by stimulation of ATP-ase.
- Chronic Metabolic Acidosis
- Diarrhea and vomiting can cause hypokalemia
  - Diarrhea by direct loss and vomiting (a cause of alkalosis) via renal excretion compensatory mechanism
  - Laxative abuse
- Renal loss is the most common cause of hypokalemia
  - Primary hyperaldosteronism
  - Secondary hyperaldosteronism – stimulation of renin production – renal artery stenosis, diuretic therapy, malignant hypertension, congenital defects of renal salt metabolism

Hyperkalemia

- Hyperkalemia - Usually due to renal impairment – Look for rising BUN and Creatinine.
- Other causes include shift from intracellular to extracellular
  - Administration of cationic amino acids (arginine, lysine, epsilon aminocaproic acid,
  - Rhabdomyolysis, hemolysis (renal failure), acute acidosis
  - Digitalis intoxication.
- Reduced renal potassium excretion
  - Aldosterone deficiency – hyporeninemic hypoalsosteronism – most common cause amongst non dialysis patients.
  - Any substance that interferes with renin or angiotensin 2 may cause hyperkalemia – ACE inhibiters, NSAIDS, Beta blockers, Heparin
- Increased intake with impaired renal function.

Diabetes

- Elderly have increased renal threshold for glucose and a decrease in the glomerular filtration rate – therefore although presence of glycosuria is very significant, the absence of glycosuria does not exclude diabetes or glucose intolerance.
- HbA1C – age related slight increase in the elderly – should be considered in test interpretation.
- Blood glucose regulation less efficient in the elderly
  - Decreased physical activity
  - Increased obesity

Blood Cell Count

- Diurnal Variation – highest in the afternoon and lowest in the morning for WBC
- Average reference values for WBC, neutrophil, and platelet concentration in the black population is lower than in the white population
  - Keep in mind when evaluating for leukopenia
- Hematologic Indices (Hgb, Hct, MCV,) lower in blacks than whites

And decrease with age in both

Keep in mind when evaluating for leukopenia or prescribing drugs that may decrease the Hgb/ Hct/ WBC - Remember

This is Normal

Erythrocyte Sedimentation Rate

- Increase in ESR with Age
- Women have greater ESR than men at any given age.
- May represent higher disease prevalence in the elderly.

Renal

- Decrease in Glomerular Filtration Rate in elderly
- 50% to 70% of glomeruli non functioning by age 60 in average adult
- Increasing creatinine with age to approximately 5 to 7% above normal
- Increased BUN and creatinine in Blacks as compared to Whites and Asians.

Kidney with chronic renal failure

Therapies

- Minute adjustments in fluid volumes can potentiate or dilute drug therapies in the elderly, particularly the frail elderly.
- Response systems (Thirst, increased urine volume with increased fluid intake) may not be as efficient as in young and middle aged

AND REMEMBER

GETTING OLD

AIN'T FOR

WIMPS