

Disorders & Diagnosis in Geriatric Medicine: A Quick Summary



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disorders, anemia due to vitamin or iron deficiency, and cancers: Basal Cell Carcinoma of skin- BCC, GI, Prostate, Breast, CLL, etc.).

As far as the laboratory diagnosis is concerned, routine organ-specific tests are very useful. They are requested based on the general population statistics from numerous studies. These show the general well-being of vital organs such as the kidneys (Creatinine), liver (ALT, AST), and thyroid (TSH) and blood (WBC, Hemoglobin, MCV, and Platelets), etc.

A quick summary of areas of the body and related disorders and tests can be summarized as follows:

- Brain:

- a) Dementia: Diagnosed clinically mainly. Special blood tests do not exist. MRI or CAT scan imaging may show degenerative changes.
- b) Alzheimer's: Clinically diagnosed. New PCR blood tests show association of some genes with this disorder, but they are not standardized as screen tests yet.
- c) Parkinson's: again a clinical testing is important, with an added neurologist's assessment. Imaging and blood tests are not useful.
- d) Cancer: No tumor markers in general use here. Imaging is used to look for tumors.

- Thyroid and parathyroid glands:

- a) Apart from a physical exam, thyroid function is mainly checked by a simple blood TSH. Total T3 and free T4 may add further data. Imaging the thyroid is mostly through U/S, and if necessary, a scintigraphy. Calcitonin is the blood tumor marker for medullary thyroid cancer.
- b) Parathyroid gland adenomas may be a cause of osteoporosis, which is usually detected on a routine osteo-densitometry imaging. PTH level, serum Calcium, urinary calcium and Vitamin D levels, and protein electrophoresis (if multiple myeloma is suspected) are requested to make a better evaluation.

- Chest and Lungs:

- a) General lung function is assessed via a stethoscope in the clinic. Chest X-Rays & CT-scans add data if needed. Tumor markers here include CYFRA for squamous cell carcinoma, and Non-specific Enolase (NSE) for Small Cell carcinoma. Arterial blood gases are used to evaluate cardiac-pulmonary circulation and blood oxygenation.

- b) Cardiac function is tested mostly in the clinic, and by additional ECG, stress testing, U/S and U/S Doppler if there is suspected decreased activity in the muscle. Cardiac enzymes such as Myoglobin, CPK-MB and Troponin are used to rule out ischemia or an acute myocardial infarction. A total cholesterol or LDL level is not useful here because cardiovascular disease (CVD) depends on 5 other well-known factors. Tests such as homocysteine, high-sensitive (hs)-CRP, Factor 5 Leiden and PT mutations, Lipoprotein-a add value to the CVD risk profile.

- Stomach:

Gastritis, reflux and ulcers may be present. Urea breath testing can rule out H. pylori presence. Gastrin and 5-HIAA level can be done to rule out VIPoma or ZE syndrome, but performing this test needs special preparation by the patient before blood drawing. Tumor markers for stomach are CEA (general GI) and CA 72-4. Although markers shed light on the differential dx, they are not a used for a primary diagnosis. Imaging and biopsy remain better options for most GI tumor detection and evaluation.

- Pancreas and Liver:

- a) The general lab test is pancreatic amylase and lipase. These rule out in most cases the presence of cancer and infection/inflammation here. Diabetes mellitus type 2 at this age is usually due to insulin-resistance; HbA1c and fasting glucose and insulin, plus general urine test offer good information as a start. Tumor markers include CEA and CA 19-9.
- b) The general lab tests for the liver include ALT (parenchymal), AST (elevated more with alcohol, also myocardial infarction), Gamma GT (associated with gall bladder) and Alkaline Phosphatase (non-specific enzyme present in bone, prostate, intestines), and Bilirubin (RBC breakdown). Liver tumors can be detected by an ultrasound, and markers include AFP and CEA.

- Kidney and Urine:

- a) These two are tested in the lab by serum urea (BUN), creatinine and a general urine exam. Creatinine increases with age, but is usually less than 1.6 mg/dL, meanwhile BUN is a more variable entity, since a high-protein diet (or gastric bleed) may lead to a sudden increase. Electrolyte levels (and acid base balance data) add value, especially with hypertensive patients, and patients with cardio-vascular illness.
- b) General urine examination provides valuable data on hydration status, the common urinary tract infection (UTI) in the elderly, and glucose and albumin. We should remember that strips used for this test usually detect glucose in urine if blood levels are above 150 mg%. Some older strip types also give a false positive glucose result with high calcium oxalate presence.

- Blood:

A general CBC is a must for all patients undergoing a

routine checkup. It helps rule out anemia (microcytic-Fe deficiency &/or GI bleed; macrocytic Vitamin B12/B9 deficiency), Chronic Lymphocytic Leukemia (CLL) which is common at this age, and infection among other illnesses. Sedimentation rate (ESR or VS) uses the same whole blood sample, but its value is limited due to its lack of specificity.

- Prostate and Breast:

- a) Prostate and breast tumors are the second most common tumors in males and females respectively (after lung). Prostate gland is evaluated by the clinical DRE, blood PSA total and free PSA/total PSA ratio. In most cases, these are enough to get a decent picture of the prostate, but further biopsy and imaging can be done when needed.
- b) Mammary gland evaluation is also done by a physical exam, and women are more and more advised to do this monthly in their homes as a way to decrease delays in diagnosing any tumor. Mammography, breast MRI and FNA help in gaining info. HER-2 receptor and CA 15-3 are used in tumor therapy, prognosis, and follow-up. BRCA gene testing helps evaluate hereditary type of breast/ovarian cancers, & requested if family history indicates it.

- Joints:

Rheumatoid arthritis, which is more common at this age, can be assessed with simple blood tests such as Rheumatoid Factor quantitative, anti-CCP, and anti-MCV tests. Genetic tests are not present for RA itself, but associated genes such as HLA-DR4, or HLA B27 can be done at a lower cost today. As for ANA (anti-nuclear Ab), studies have shown that low-positive ANA (like 1/100 by I.F. method) may not be indicative of any disease at ages 60 years and above, for males and females.

- Stool:

Stool exams are important at this age since they detect GI bleeds through the Occult blood test, which at this age is associated with colon cancer. Newly released tests such as Calprotectin can also rule out intestinal inflammation which causes watery/bloody diarrhea (Crohn's disease, Inflammatory Bowel Disease or IBD); if positive, endoscopy will be next on the line. Lactoferrin, is another newer test to help evaluate IBD. Negative values for Calprotectin, for example, can help delete an un-necessary invasive endoscopy. Another new stool test is the M2-Pyr-Kinase or M2PK, which is a test to rule out colon cancer: this test is relatively new, not available in most labs, and not fully standardized worldwide for general testing. In conclusion, geriatric medicine is as complicated and challenging for the physician as pediatric or adult medicine. The above only gives us a tip from the iceberg of information in medicine for this age group. With more diagnostic tests being available per disorder, including more molecular PCR tests and more advanced radiologic innovations, the senior age group should enjoy simpler, straight-forward medical evaluation & better health care.