

a-1 FETOPROTEIN (ALPHA-I-FETOPROTEIN)

Elevated in:

Hepatocellular carcinoma (usually values >1000 ng/ml), germinal neoplasms (testis, ovary, mediastinum, retroperitoneum), liver disease (alcoholic cirrhosis, acute hepatitis, chronic active hepatitis), fetal anencephaly, spina bifida

ACETONE (serum or plasma)

Elevated in:

DKA, starvation, isopropanol Ingestion

ACID PHOSPHATASE (serum)

Elevated in:

Carcinoma of prostate, other neoplasms (breast, bone), Paget's disease, osteogenesis imperfecta, malignant invasion of bone, Gaucher's disease, multiple myeloma, myeloproliferative disorders, benign prostatic hypertrophy, prostatic palpation or surgery, hyperparathyroidism, liver disease, chronic renal failure

ALANINE AMINOTRANSFERASE (ALT, SGPT)

Elevated in:

Liver disease (hepatitis, cirrhosis, Reye's syndrome), hepatic congestion, infectious mononucleosis, M1, myocarditis, severe muscle trauma, dermatomyositis/polymyositis, muscular dystrophy, drugs (antibiotics, narcotics, antihypertensive agents, heparin, labetalol, lovastatin, NSAIDs, amiodarone, chlorpromazine, phenytoin), malignancy, renal and pulmonary infarction, convulsions, eclampsia, shock liver

ALBUMIN (serum)

Elevated in:

Dehydration

Decreased in:

Liver disease, nephrotic syndrome, poor nutritional status, rapid IV hydration, protein-losing enteropathies (inflammatory bowel disease), severe burns, neoplasia, chronic inflammatory diseases, pregnancy, oral contraceptives, prolonged immobilization

ALDOLASE (serum)

Elevated in:

Muscular dystrophy, rhabdomyolysis, dermatomyositis/polymyositis, trichinosis, acute hepatitis and other liver diseases, M1, prostatic carcinoma, hemorrhagic pancreatitis, gangrene, delirium tremens

Decreased in:

Loss of muscle mass, late stages of muscular dystrophy

ALKALINE PHOSPHATASE (serum)

Elevated in:

Biliary obstruction, cirrhosis (particularly primary biliary cirrhosis), liver disease (hepatitis, infiltrative liver diseases, fatty metamorphosis), Paget's disease of bone, osteitis deformans, rickets,

osteomalacia, hypervitaminosis D, hyperparathyroidism, hyperthyroidism, ulcerative colitis, bowel perforation, bone metastases, healing fractures, bone neoplasms, acromegaly, infectious mononucleosis, CMV infections, sepsis, pulmonary infarction, CHF, hypernephroma, leukemia, myelofibrosis, multiple myeloma, drugs (estrogens, albumin, erythromycin and other antibiotics, cholestasis-producing drugs [phenothiazines])

Decreased in:

Hypothyroidism, pernicious anemia, hypophosphatemia, hypervitaminosis D, malnutrition

AMMONIA (serum)

Elevated in:

Hepatic failure, hepatic encephalopathy, Reye's syndrome, portacaval shunt, drugs (diuretics, polymyxin B, methicillin)

Decreased in:

Drugs (neomycin, lactulose, tetracycline), renal failure

AMYLASE (serum)

Elevated in:

Acute pancreatitis, pancreatic neoplasm, abscess, pseudocyst, ascites, macroamylasemia, perforated peptic ulcer, intestinal obstruction, intestinal infarction, acute cholecystitis, appendicitis, ruptured ectopic pregnancy, salivary gland inflammation, peritonitis, burns, diabetic ketoacidosis, renal insufficiency, drugs (morphine), carcinomatosis of lung, esophagus, ovary, acute ethanol ingestion

Decreased in:

Advanced chronic pancreatitis, hepatic necrosis

ANGIOTENSIN CONVERTING ENZYME (ACE level)

Elevated in:

Sarcoidosis, primary biliary cirrhosis, alcoholic liver disease, hyperthyroidism, hyperparathyroidism, diabetes mellitus, amyloidosis, multiple myeloma, lung disease (asbestosis, silicosis, berylliosis, allergic alveolitis, coccidioidomycosis), Gaucher's disease, leprosy

ANION GAP

Elevated in:

Lactic acidosis
Ketoacidosis (DKA, alcoholic starvation)
Uremia (chronic renal failure)
Ingestion of toxins (paraldehyde, methanol, salicylates, ethylene glycol)

Decreased in:

Hypoalbuminemia, severe hypomagnesemia, IgG myeloma, lithium toxicity, lab error (falsely
Decreased sodium or overestimation of bicarbonate or chloride)

ANTI-DNA

Present in:

SLE, chronic active hepatitis, infectious mononucleosis, biliary cirrhosis

ANTI-STREPTOLYSIN O TITER (STREPTOZYME, ASLO titer)

Elevated in:

Streptococcal upper airway infection, acute rheumatic fever, acute glomerulonephritis, increased levels of B-lipoprotein

NOTE: A fourfold increase in titer between acute and convalescent specimens is diagnostic of streptococcal upper airway infection regardless of the initial titer.

ANTIMITOCHONDRIAL ANTIBODY

Elevated in:

Primary biliary cirrhosis (85-95%), chronic active hepatitis (25%-30%)
cryptogenic cirrhosis (25-30%)

ANTINUCLEAR ANTIBODY (ANA)

Positive test:

SLE (more significant if titer >1: 160), drugs (phenytoin, ethosuximide, pnmudone, methyl dopa, hydralazine, carbamazepine, penicillin, procainamide, chlorpromazine, griseofulvin, thiazides), chronic active hepatitis, age over 60 yr (particularly age over 80), rheumatoid arthritis, scleroderma, mixed connective tissue disease, necrotizing vasculitis, Sjogren's syndrome (SS), tuberculosis, pulmonary interstitial fibrosis

ANTITHROMBIN III

Decreased in:

Hereditary deficiency of antithrombin III, DIC, pulmonary embolism, cirrhosis, thrombolytic therapy, chronic liver failure, post-surgery, third trimester of pregnancy, oral contraceptives, nephrotic syndrome, IV heparin >3 days, sepsis

Elevated in:

Warfarin drugs, post-MI

ASPARTATE AMINOTRANSFERASE (AST, SGOT)

Elevated in:

Liver disease (hepatitis, cirrhosis, Reye's syndrome), hepatic congestion, infectious mononucleosis, MI, myocarditis, severe muscle trauma, dermatomyositis/polymyositis, muscular dystrophy, drugs (antibiotics, narcotics, antihypertensive agents, heparin, labetalol, lovastatin, NSAIDs, phenytoin, amiodarone, chlorpromazine), malignancy, renal and pulmonary infarction, convulsions, eclampsia

BASOPHIL COUNT

Elevated in:

Leukemia, inflammatory processes, polycythemia vera, Hodgkin's Lymphoma, hemolytic anemia, after splenectomy, myeloid metaplasia

Decreased in:

Stress, hypersensitivity reaction, steroids, pregnancy, hyperthyroidism

BILIRUBIN, DIRECT (conjugated bilirubin)

Elevated in:

Hepatocellular disease, biliary obstruction, drug-induced cholestasis, hereditary disorders (Dubin-Johnson syndrome, Rotor's syndrome)

BILIRUBIN, INDIRECT (unconjugated bilirubin)

Elevated in:

Hemolysis, liver disease (hepatitis cirrhosis, neoplasm), hepatic congestion secondary to congestive heart failure, hereditary disorders (Gilbert's disease, Crigler-Najjar syndrome)

BILIRUBIN, TOTAL

Elevated in:

Liver disease (hepatitis, cirrhosis, cholangitis, neoplasm, biliary obstruction, infectious mononucleosis), hereditary disorders (Gilbert's disease, Dubin-Johnson syndrome), drugs (steroids, diphenylhydantoin, phenothiazines, penicillin, erythromycin, clindamycin, captopril, amphotericin B, sulfonamides, azathioprine, isoniazid, 5-aminosalicylic acid, allopurinol, methyldopa, indomethacin, halothane, oral contraceptives, procainamide, tolbutamide, labetalol), hemolysis, pulmonary embolism or infarct, hepatic congestion secondary to CHF

BLEEDING TIME (modified Ivy method)

Elevated in:

Thrombocytopenia, capillary wall abnormalities, platelet abnormalities (Bernard-Soulier, Glanzmann's), drugs (aspirin, warfarin, antiinflammatory medications, streptokinase, urokinase, dextran, B lactam antibiotics, moxalactam), DIC, cirrhosis, uremia, myeloproliferative disorders, Von Willebrand's

C-REACTIVE PROTEIN

Elevated in:

Rheumatoid arthritis, rheumatic fever, inflammatory bowel disease, bacterial infections, MI, oral contraceptives, third trimester of pregnancy (acute phase reactant), inflammatory and neoplastic diseases

CALCITONIN (serum)

Elevated in:

Medullary carcinoma of the thyroid (particularly if level >1500 pg/ml), carcinoma of the breast, APUDomas, carcinoids, renal failure, thyroiditis

CALCIUM (serum)

Increased in:

- Hyperparathyroidism, primary (due to hyperplasia or adenoma of parathyroids) or secondary
- Hyperparathyroidism due to parathormone-secreting cancer
- Hematologic malignancies (e.g., myeloma, lymphoma, leukemia)
- Excess vitamin D intake
- Bone tumor (Metastatic carcinoma (10% of patients))
- Acute osteoporosis (e.g., immobilization of young patients or in Paget's disease)

- Milk-alkali (Burnett's) syndrome
- Idiopathic hypercalcemia of infants
- Infantile hypophosphatasia
- Berylliosis
- Hyperthyroidism (some patients)
- Cushing's syndrome (some patients)
- Addison's disease (some patients)
- Myxedema (some patients)
- Hyperproteinemia (Sarcoidosis, -Multiple myeloma (some patients))
- Thiazide drugs
- Artifactual (e.g., venous stasis during blood collection, use of cork-stoppered test tubes)

Decreased in:

- Hypoparathyroidism (Surgical; Idiopathic; Pseudohypoparathyroidism)
- Malabsorption of calcium and vitamin D (Obstructive jaundice)
- Hypoalbuminemia (Cachexia, Nephrotic syndrome, Sprue, Celiac disease, Cystic fibrosis of pancreas)
- Chronic renal disease with uremia and phosphate retention
- Acute pancreatitis with extensive fat necrosis
- Insufficient calcium, phosphorus, and vitamin D ingestion (Bone disease (osteomalacia, rickets); Starvation; Late pregnancy)

Total serum protein should always be known for proper interpretation of serum calcium levels.

 CARBOXYHEMOGLOBIN (CARBON MONOXIDE; CO)

Elevated in:

Smoking, exposure to smoking, exposure to automobile exhaust fumes
 malfunctioning gas-burning appliances

 CARCINOEMBRYONIC ANTIGEN (CEA)

Elevated in:

Colorectal carcinomas, pancreatic carcinomas, and metastatic disease
 usually produce higher elevations (>20 ng/ml)

Carcinomas of the esophagus, stomach, small intestine, liver, breast
 ovary, lung and thyroid usually produce lesser elevations

Benign conditions (smoking, inflammatory bowel disease, hypothyroidism,
 cirrhosis, pancreatitis, infections) usually produce levels <10 ng/ml

 CAROTENE (serum)

Elevated in:

Carotenemia, chronic nephritis, diabetes mellitus, hypothyroidism,
 nephrotic syndrome

Decreased in:

Fat malabsorption, steatorrhea, pancreatic insufficiency, lack of
 carotenoids in diet

 CEREBROSPINAL FLUID (CSF)

 CERULOPLASMIN (serum)

Elevated in:

Pregnancy, estrogens, oral contraceptives, neoplastic diseases (leukemias, Hodgkin's lymphoma, carcinomas), inflammatory states, SLE, primary biliary cirrhosis, rheumatoid arthritis

Decreased in:

Wilson's disease (values often <10 mg/dl), nephrotic syndrome, advanced liver disease, malabsorption, total parenteral nutrition, Menkes' syndrome

CHLORIDE (serum)

Elevated in:

-Dehydration, excessive infusion of normal saline
-Hyperparathyroidism, renal tubular disease, metabolic acidosis, prolonged diarrhea
-Drugs (ammonium chloride administration, acetazolamide, boric acid, triamterene)

Decreased in:

CHF, SIADH, Addison's disease, vomiting, gastric suction, salt-losing nephritis, continuous infusion of D5W, thiazide diuretic administration, diaphoresis, diarrhea, burns

CHOLESTEROL, TOTAL

Elevated in:

Primary hypercholesterolemia, biliary obstruction, diabetes mellitus, nephrotic syndrome, hypothyroidism, primary biliary cirrhosis, high cholesterol diet, third trimester of pregnancy, MI, drugs (steroids, phenothiazines, oral contraceptives)

Decreased in:

Starvation, malabsorption, sideroblastic anemia, thalassemia, abetalipoproteinemia, hyperthyroidism, Cushing's syndrome, hepatic failure, multiple myeloma, polycythemia vera, chronic myelocytic leukemia, myeloid metaplasia, Waldenström's macroglobulinemia, myelofibrosis

CIRCULATING ANTICOAGULANT (lupus anticoagulant)

Detected in:

SLE, drug-induced lupus, long-term phenothiazine therapy, multiple myeloma, ulcerative colitis, rheumatoid arthritis, postpartum, hemophilia, neoplasms, chronic inflammatory states

COLD AGGLUTININS TITER

Elevated in:

Primary atypical pneumonia (mycoplasma pneumonia), infectious mononucleosis, CMV infection

Other: hepatic cirrhosis, acquired hemolytic anemia, frostbite, multiple myeloma, lymphoma, malaria

COMPLEMENT (C3, C4)

C3 is increased in:

Acute and chronic inflammation (slightly), obstructive jaundice

C3 is decreased in:
Acute glomerulonephritis, systemic lupus erythromatosis

COOMBS, DIRECT

Positive:

Autoimmune hemolytic anemia, erythroblastosis fetalis, transfusion reactions, drugs (a-methyldopa, penicillins, tetraeyeline, sulfonamides, levodopa, cephalosporins, quinidine, insulin)

False positive:

May be seen with cold agglutinins

COOMBS, INDIRECT

Positive:

Acquired hemolytic anemia, incompatible cross-matched blood, anti-Rh antibodies, drugs (methyldopa, mefenamic acid, levodopa)

COPPER (serum)

Increased in:

- Anemias (Pernicious anemia, Megaloblastic anemia of pregnancy, Iron deficiency anemia, Aplastic anemia, Leukemia, acute and chronic, Infection, acute and chronic, Malignant lymphoma, Hemochromatosis)
- Collagen diseases (including SLE, rheumatoid arthritis, acute rheumatic fever, glomerulonephritis)
- Hypothyroidism
- Hyperthyroidism
- Frequently associated with increased C-reactive protein

Decreased in:

- Nephrosis (ceruloplasmin lost in urine)
- Wilson's disease
- Acute leukemia in remission
- Some iron deficiency anemias of childhood (that require copper as well as iron therapy)
- Kwashiorkor

CORTISOL (plasma)

Elevated in:

- Ectopic ACTH production (i.e., oat cell carcinoma of lung), loss of normal diurnal variation, pregnancy, chronic renal failure
- Iatrogenic, stress, adrenal or pituitary hyperplasia or adenomas

Decreased in:

Primary adrenocortical insufficiency, anterior pituitary hypofunction, secondary adrenocortical insufficiency, adrenogenital syndromes

CREATINE KINASE (CK, CPK)

Elevated in:

MI, myocarditis, rhabdomyolysis, myositis, crush injury/trauma, polymyositis, dermatomyositis, vigorous exercise, muscular dystrophy, myxedema, seizures, malignant hyperthermia syndrome, IM injections, CVA, pulmonary embolism and infarction, acute dissection of aorta

Decreased in:

Steroids, decreased muscle mass, connective tissue disorders, alcoholic liver disease, metastatic neoplasms

CREATINE KINASE ISOENZYMES

CK-MB

Elevated in: Mi, myocarditis, pericarditis, muscular dystrophy, cardiac defibrillation, cardiac surgery, extensive rhabdomyolysis, strenuous exercise (marathon runners), mixed connective tissue disease, cardiomyopathy, hypothermia

CK-MM

Elevated in: crush injury, seizures, malignant hyperthermia syndrome, rhabdomyolysis, myositis, polymyositis, dermatomyositis, vigorous exercise, muscular dystrophy, IM injections, acute dissection of aorta

CK-BB

Elevated in: CVA, subarachnoid hemorrhage, neoplasms (prostate, GI tract, brain, ovary, breast, lung), severe shock, bowel infarction, hypothermia

CREATININE (serum)

Elevated in:

Renal insufficiency (acute and chronic),
Decreased renal perfusion (hypotension, dehydration, CHF), urinary tract infection, rhabdomyolysis, ketonemia
Drugs (antibiotics [aminoglycosides, cephalosporins], hydantoin, diuretics, methyldopa)

Falsely elevated in:

DKA, administration of some cephalosporins (e.g., cefoxitin, cephalothin)

Decreased in:

Decreased muscle mass (including amputees and older persons), pregnancy, prolonged debilitation

CREATININE CLEARANCE

Elevated in:

Pregnancy, exercise

Decreased in:

Renal insufficiency, drugs (cimetidine, procainanude, antibiotics, quinidine)

CRYOGLOBULINS (serum)

Present in:

Collagen-vascular diseases, CLL, hemolytic anemias, multiple myeloma, Waldenstrom's macroglobulinemia, chronic active hepatitis, Hodgkin's disease

D-XYLOSE ABSORPTION

Decreased in:

Malabsorption syndrome

EOSINOPHIL COUNT

Elevated in:

Allergy, parasitic infestations (trichinosis, aspergillosis, hydatidosis), angmneurotic edema, drug reactions, warfarin sensitivity, collagen-vascular diseases, acute hypereosinophilic syndrome, eosinophilic nonallergic rhinitis, myeloproliferative disorders, Hodgkin's Iymphoma, radiation therapy, NHL, L-tryptophan ingestion

ERYTHROCYTE SEDIMENTATION RATE (Westergren)

Elevated in:

Collagen-vascular diseases, infections, MI, neoplasms, inflammatory states (acute phase reactant)

EXTRACTABLE NUCLEAR ANTIGEN (ENA complex, anti-RNP antibody, anti-Sm, anti-Smith)

Present in:

SLE, rheumatoid arthritis, Sjogren's syndrome, MCTD

FECAL FAT, QUANTITATIVE (72 hr collection)

Elevated in:

Malabsorption syndrome

FERRITIN (serum)

Elevated in:

Hyperthyroidism, inflammatory states, liver disease (ferritin elevated from necrotic hepatocytes), neoplasms (neuroblastomas, Iymphomas, leukemia, breast carcinoma), iron replacement therapy, hemochromatosis

Decreased in:

Iron deficiency anemia

FIBRIN DEGRADATION PRODUCT (FDP)

Elevated in:

DIC, primary fibrinolysis, pulmonary embolism, severe liver disease

NOTE: The presence of rheumatoid factor may cause falsely elevated FDP

FIBRINOGEN

Elevated in:

Tissue inflammation/damage (acute-phase protein reactant), oral contraceptives, pregnancy, acute infection, MI

Decreased in:

DIC, hereditary afibrinogenemia, liver disease, primary or secondary fibrinolysis, cachexia

FOLATE (FOLIC ACID)

Decreased in:

Folic acid deficiency (inadequate intake, malabsorption), alcoholism, drugs (methotrexate, trimethoprim, phenytoin, oral contraceptives, azulfadine), vitamin B12 deficiency (defective red cell folate absorption)

FTA-ABS (serum) (FLUORESCENT TREPONEMAL ANTIBODY)

Reactive in:
Syphilis, other treponemal diseases (yaws, pinta, bejel)

GASTRIN (serum)

Elevated in:
Zollinger-Ellison syndrome (gastrinoma), pernicious anemia, hyperparathyroidism, retained gastric antrum, chronic renal failure, gastric ulcer, chronic atrophic gastritis, pyloric obstruction, malignant neoplasms of the stomach, H2 blockers, omeprazole

GLOMERULAR BASEMENT MEMBRANE ANTIBODY (ANTIGLOMERULAR BASEMENT ANTIBODY)

Present in:
Goodpasture's syndrome

GLUCOSE-6-PHOSPHATE DEHYDROGENASE SCREEN (blood)

Abnormal:
If a deficiency is detected, quantitation of G6PD is necessary; a G6PD screen may be falsely interpreted as abnormal

GLUCOSE TOLERANCE TEST

Elevated in:
Glucose intolerance, diabetes mellitus, Cushing's syndrome, acromegaly, pheochromocytoma

GLUCOSE, FASTING

Elevated in:
Diabetes mellitus, stress, infections, MI, CVA, Cushing's syndrome, acromegaly, acute pancreatitis, glucagonoma, hemochromatosis, drugs (glucocorticoids, diuretics [thiazides, loop diuretics]), glucose intolerance

GLUCOSE, POSTPRANDIAL

Elevated in:
Diabetes mellitus, glucose intolerance

Decreased in:
Post-gastrointestinal resection, reactive hypoglycemia, hereditary fructose intolerance, galactosemia, leucine sensitivity

GLYCATED (GLYCOSYLATED) HEMOGLOBIN (HbA1c)

Elevated in:
Uncontrolled diabetes mellitus (glycated hemoglobin levels reflect the level of glucose control over the preceding 120 days)

Decreased in:
Hemolytic anemias,
Decreased RBC survival, pregnancy, chronic blood loss, chronic renal
failure, insulinoma

HAM TEST (acid serum test)

Positive in:
Paroxysmal nocturnal hemoglobinuria (PNH)

False positive in:
Hereditary or acquired spherocytosis, recent transfusion with aged RBC,
aplastic anemia, myeloproliferative syndromes, leukemia, hereditary
dyserythropoietic anemia type II (HEMPAS)

HAPTOGLOBIN (serum)

Elevated in:
Inflammation (acute phase reactant), collagen-vascular diseases,
infections (acute phase reactant), drugs (androgens)

Decreased in:
Hemolysis (intravascular > extravascular), megaloblastic anemia, severe
liver disease, large tissue hematomas, infectious mononucleosis, drugs
(oral contraceptives)

HEMATOCRIT

Elevated in:
Polycythemia vera, smoking, COPD, high altitudes, dehydration,
hypovolemia

Decreased in:
Blood loss (GI, GU), anemia, pregnancy

HEMOGLOBIN

Elevated in:
Hemoconcentration, dehydration, polycythemia vera, COPD, high altitudes,
false elevations (hyperlipemic plasma, WBC >50,000 mm³), stress

Decreased in:
Hemorrhage (GI, GU), anemia

HEPATITIS A ANTIBODY

Present in:
Viral hepatitis A, can be IgM or IgG (if IgM, acute hepatitis A; if IgG,
previous infection with hepatitis A)

HEPATITIS B SURFACE ANTIGEN (HBsAg)

Detected in:
Acute viral hepatitis Type B. Chronic hepatitis B

HIGH DENSITY LIPOPROTEIN (HDL) CHOLESTEROL

Increased:

Use of gemfibrozil, nicotinic acid, estrogens, regular aerobic exercise, small (1 oz) daily alcohol intake

Decreased:

Deficiency of apoproteins, liver disease, probucol ingestion, Tangier disease

NOTE: A cholesterol/HDL ratio >4.5 is associated with increased risk of coronary artery disease.

IMMUNE COMPLEX ASSAY

Detected in:

Collagen-vascular disorders, glomerulonephritis, neoplastic diseases, malaria, primary biliary cirrhosis, chronic acute hepatitis, bacterial endocarditis, vasculitis

IMMUNOGLOBULINS

Elevated in:

- IgA: Iymphoproliferative disorders, Berger's nephropathy, chronic infections, autoimmune disorders, liver disease
- IgE: allergic disorders, parasitic infections, immunological disorders
IgE myeloma
- IgG: chronic granulomatous infections, infectious diseases, inflammation, myeloma, liver disease
- IgM: primary biliary cirrhosis, infectious diseases (brucellosis, malaria), Waldenstrom's macroglobulinemia, liver disease

Decreased in:

- IgA: nephrotic syndrome, protein-losing enteropathy, congenital deficiency, Iymphocytic leukemia, ataxia-telengiectasia, chronic eosinopulmonary disease
- IgE: hypogammaglobulinemia, neoplasm (breast, bronchial, cervical) ataxia, telengiectasia
- IgG: congenital or acquired deficiency, Iymphocytic leukemia, phenytoin, methylprednisolone, nephrotic syndrome, protein-losing enteropathy
- IgM: congenital deficiency, Iymphocytic leukemia, nephrotic syndrome

IRON-BINDING CAPACITY (TIBC)

Elevated in:

Iron deficiency anemia, pregnancy, polycythemia

Decreased in:

Anemia of chronic disease, hemochromatosis, chronic liver disease, hemolytic anemias, malnutrition (protein depletion)

LACTATE (blood)

Increased in:

(Without signifigant acidosis): Muscular exercise, hyperbentilation, glucaon, glycogen storage disease, severe anemia, pyruvate infusion, HCO3 infusion, glucose and insulin infusion.

(With hypoxia and acidosis): Acute hemorrhage, circulatory collapse, cyanotic heart disease, severe acute CHF, acute anoxemia, extracorpeal circulation, epinephrine

(Idiopathic): Mild uremia, infections (esp. pyelonephritis), septicemia, cirrhosis, acute pancreatitis (+/-), third trimester of pregnancy, severe vascular disease, leukemia, anemia, chronic alcoholism, subacute bacterial endocarditis, poliomyelitis

LACTATE DEHYDROGENASE (LDH)

Elevated in:

Infarction of myocardium, lung, kidney

Diseases of cardiopulmonary system, liver, collagen, CNS

Hemolytic anemias, megaloblastic anemias, transfusions, seizures, muscle trauma, muscular dystrophy, acute pancreatitis hypotension shock, infectious mononucleosis, inflammation, neoplasia, intestinal obstruction, hypothyroidism

LACTATE DEHYDROGENASE ISOENZYMES

Abnormal values:

LDH1 > LDH2: MI (can also be seen with hemolytic anemias, pernicious anemia, folate deficiency, renal infarct)

LDH5 > LDH4: liver disease (cirrhosis, hepatitis, hepatic congestion)

LEGIONELLA TITER

Positive in:

Legionnaire's disease (presumptive: > 1:256 titer; definitive: fourfold titer increase to >1: 128)

LEUKOCYTE ALKALINE PHOSPHATASE (LAP SCORE)

Elevated in:

Leukemoid reactions, neutrophilia secondary to infections (except in sickle cell crisis, no significant increase in LAP score), Hodgkin's disease, polycythemia vera, hairy cell leukemia, aplastic anemia, Down's syndrome, myelofibrosis

Decreased in:

Acute and chronic granulocytic leukemia, thrombocytopenic purpura, paroxysmal nocturnal hemoglobinuria (PNH), hypophosphatemia, collagen disorders

LIPASE

Elevated in:

Acute pancreatitis, perforated peptic ulcer, carcinoma of pancreas (early stage), pancreatic duct obstruction

LOW DENSITY LIPOPROTEIN (LDL) CHOLESTEROL

Elevated in:

Primary hyperlipoproteinemia, diet high in saturated fats, acute MI, hypothyroidism, primary biliary cirrhosis, nephrosis, diabetes mellitus

Decreased in:

Abetalipoproteinemia, advanced liver disease, malabsorption, malnutrition

LYMPHOCYTES

Elevated in:

Chronic infections, infectious mononucleosis and other viral infections, CLL, Hodgkin's disease, ulcerative colitis, hypoadrenalism, ITP

Decreased in:

AIDS, ARC, bone marrow suppression from chemotherapeutic agents or chemotherapy, aplastic anemia, neoplasms, steroids, adrenocortical hyperfunction, neurologic disorders (multiple sclerosis, myasthenia gravis, Guillain-Barre syndrome)

MAGNESIUM (serum)

Increased in:

- Renal failure
- Diabetic coma before treatment
- Hypothyroidism
- Addison's disease and after adrenalectomy
- Controlled diabetes mellitus in older patients
- Administration of antacids containing magnesium

Decreased in:

- GI disease showing malabsorption and abnormal loss of GI fluids (e.g., nontropical sprue, small bowel resection, biliary and intestinal fistulas, abdominal irradiation, prolonged aspiration of intestinal contents, celiac disease and other causes of steatorrhea)
- Acute alcoholism and alcoholic cirrhosis
- Insulin treatment of diabetic coma
- Hyperthyroidism
- Aldosteronism
- Hyperparathyroidism
- Lytic tumors of bone
- Diuretic drug therapy (e.g., ethacrynic acid, furosemide)
- Some cases of renal disease (e.g., glomerulonephritis, pyelonephritis, renal tubular acidosis)
- Acute pancreatitis
- Excessive lactation
- Idiopathic disorders

Magnesium deficiency may cause apparently unexplained hypocalcemia and hypokalemia; the patients may have neurologic and GI symptoms

MEAN CORPUSCULAR VOLUME (MCV)

Elevated in:

Vitamin B12 deficiency, folic acid deficiency, liver disease, alcohol abuse, reticulocytosis, hypothyroidism, marrow aplasia, myelofibrosis

Decreased in:

Iron deficiency, thalassemia syndrome and other hemoglobinopathies, anemia of chronic disease, sideroblastic anemia, chronic renal failure, lead poisoning

MONOCYTE COUNT

Elevated in:

Viral diseases, parasites, infections, neoplasms, inflammatory bowel disease, monocytic leukemia, lymphomas, myeloma, sarcoidosis

Decreased in:

Aplastic anemia, Lymphocytic leukemia, glucocorticoid administration

NEUTROPHIL COUNT

Elevated in:

Acute bacterial infections, acute MI, stress, neoplasms, myelocytic leukemia

Decreased in:

Viral infections, aplastic anemias, immunosuppressive drugs, radiation therapy to bone marrow, agranulocytosis, drugs (antibiotics, antithyroidals), Lymphocytic and monocytic leukemias

OSMOLALITY, SERUM

It can be estimated by the following formula:

$2([\text{Na}] + [\text{K}]) + \text{Glucose}/18 + \text{BUN}/2.8$

Elevated in:

Dehydration, hypernatremia, diabetes insipidus, uremia, hyperglycemia, mannitol therapy, ingestion of toxins (ethylene glycol, methanol ethanol)

Decreased in:

SIADH, hyponatremia, overhydration

pH, BLOOD

Increased in:

Metabolic alkalosis, respiratory alkalosis

Decreased in:

Metabolic acidosis, respiratory acidosis

PARTIAL THROMBOPLASTIN TIME (PTT), ACTIVATED PARTIAL THROMBOPLASTIN TIME (APTT)

Elevated in:

Heparin therapy, coagulation factor deficiency (I, II, V, VIII, IX, X, XI XII), liver disease, vitamin K deficiency, DIC, circulating anticoagulant, warfarin therapy, specific factor inhibition (PCN reaction, rheumatoid arthritis), thrombolytic therapy

NOTE: Useful to evaluate the intrinsic coagulation system.

PHOSPHATASE, ALKALINE; see ALKALINE PHOSPHATASE PHOSPHORUS (serum)

Elevated in:

Renal failure, dehydration, Addison's disease, myelogenous leukemia, hypervitaminosis D, hypoparathyroidism, pseudohypoparathyroidism, bone metastases, sarcoidosis, milk-alkali syndrome, immobilization, magnesium deficiency, transfusions, hemolysis

Decreased in:

Starvation (e.g., alcoholics), DKA, TPN, continuous IV dextrose administration, vitamin D deficiency, hyperparathyroidism, pseudohyperparathyroidism, antacids containing aluminum hydroxide,

insulin administration, nasogastric suctioning, vomiting, diuretics, steroids, gram-negative septicemia

PHOSPHORUS (serum)

Increased in:

- Hypoparathyroidism (Idiopathic, Surgical, Pseudohypoparathyroidism)
- Excess vitamin D intake
- Secondary hyperparathyroidism (renal rickets)
- Bone disease (Healing fractures, Multiple myeloma (some patients), Paget's disease (some patients), Osteolytic metastatic tumor in bone (some patients))
- Addison's disease
- Acromegaly
- Childhood
- Myelogenous leukemia
- Acute yellow atrophy
- High intestinal obstruction
- Sarcoidosis (some patients)
- Milk-alkali (Burnett's) syndrome (some patients)
- Artifactual increase by hemolysis of blood

Decreased in

- Alcoholism*
- Diabetes mellitus*
- Hyperalimentation*
- Nutritional recovery syndrome* (rapid refeeding after prolonged starvation)
- Alkalosis, respiratory (e.g., gram-negative bacteremia) or metabolic
- Acute gout
- Salicylate poisoning
- Administration of glucose intravenously (e.g., recovery after severe burns, hyperalimentation)
- Administration of anabolic steroids, androgens, epinephrine, glucagon, insulin
- Acidosis (especially ketoacidosis)
- Hyperparathyroidism
- Renal tubular defects (e.g., Fanconi syndrome)
- Hypokalemia
- Hypomagnesemia
- Administration of diuretics
- Prolonged hypothermia (e.g., open heart surgery)
- Malabsorption
- Vitamin D deficiency and/or resistance, osteomalacia
- Malnutrition, vomiting, diarrhea
- Administration of phosphate-binding antacids*
- Primary hypophosphatemia

*Indicates conditions associated with severe hypophosphatemia.

Mechanisms of hypophosphatemia are intracellular shift of phosphate, increased loss (via kidney or intestine), or decreased intestinal absorption; usually associated with prior phosphorus depletion. Often, more than one mechanism is operative.

PLATELET COUNT

Elevated in:

Neoplasms (GI tract), CML, polycythemia vera, myelofibrosis with myeloid metaplasia, infections, after splenectomy, postpartum, after hemorrhage, hemophilia, iron deficiency, pancreatitis, cirrhosis

POTASSIUM (serum)

Increased in:

- Renal failure: (Acute with oliguria or anuria; Chronic end-stage with oliguria (glomerular filtration rate <3-5 ml/minute); Chronic nonoliguric associated with dehydration, obstruction, trauma, or excess potassium)
- Decreased mineralocorticoid activity: (Addison's disease; Hypofunction of renin-angiotensin-aldosterone system; Pseudohypoaldosteronism; Aldosterone antagonist (e.g., spironolactone))
- Increased supply of potassium: (Red blood cell hemolysis (transfusion reaction, hemolytic anemia); Excess dietary intake or rapid potassium infusion; Striated muscle (status epilepticus, periodic paralysis); Potassium-retaining drugs (e.g., triamterene); Fluid-electrolyte imbalance (e.g., dehydration, acidosis))
- Laboratory artifacts (e.g., hemolysis during venipuncture, conditions associated with thrombocytosis, incomplete separation of serum and clot)

Decreased in:

- Renal and adrenal conditions with metabolic alkalosis: (Administration of diuretics, Primary aldosteronism, Pseudoaldosteronism, Salt-losing nephropathy, Cushing's syndrome)
- Renal conditions associated with metabolic acidosis: (Renal tubular acidosis, Diuretic phase of acute tubular necrosis, Chronic pyelonephritis, Diuresis following relief of urinary tract obstruction)
- Gastrointestinal conditions: (Vomiting, gastric suctioning; Villous adenoma; Cancer of colon; Chronic laxative abuse; Zollinger-Ellison syndrome; Chronic diarrhea; Ureterosigmoidostomy)

PROLACTIN

Elevated in:

Prolactinomas (level >200 highly suggestive), drugs (phenothiazines, cimetidine, tricyclic antidepressants, metoclopramide, estrogens, antihypertensives [methyldopa], verapamil, haloperidol), postpartum, stress, hypoglycemia, hypothyroidism

PROTEIN (serum)

Elevated in:

Dehydration, multiple myeloma, Waldenstrom's macroglobulinemia, sarcoidosis, collagen-vascular diseases

Decreased in:

Malnutrition, low-protein diet, overhydration, malabsorption, pregnancy, severe burns, neoplasms, chronic diseases, cirrhosis, nephrosis

PROTEIN ELECTROPHORESIS (serum)

Elevated:

- Albumin: dehydration
- a-1: neoplastic diseases, inflammation
- a-2: neoplasms, inflammation, infection, nephrotic syndrome
- b: hypothyroidism, biliary cirrhosis, diabetes mellitus
- y: see IMMUNOGLOBULINS

Decreased:

-Albumin: malnutrition, chronic liver disease, malabsorption, nephrotic syndrome, burns, SLE

-a-1: emphysema (a-1 antitrypsin deficiency), nephrosis
-a-2: hemolytic anemias (Decreased haptoglobin), severe hepatocellular damage
-b: hypocholesterolemia, nephrosis
-y: see IMMUNOGLOBULINS

PROTHROMBIN TIME (PT)

Elevated in:

Liver disease, oral anticoagulants (Warfarin), heparin, factor deficiency (I, II, V, VII, X), DIC, vitamin K deficiency, afibrinogenemia, dysfibrinogenemia, drugs (salicylates, chloral hydrate, diphenylhydantoin, estrogens, antacids, phenylbutazone, quinidine, antibiotics, allopurinol, anabolic steroids)

Decreased in:

Vitamin K supplementation, thrombophlebitis, drugs (glutethimide, estrogens, griseofulvin, diphenhydramine)

PROTOPORPHYRIN (free erythrocyte)

Elevated in:

Iron deficiency, lead poisoning, sideroblastic anemias, anemia of chronic disease, hemolytic anemias, erythropoietic protoporphyria

RED BLOOD CELL COUNT

Elevated in:

Polycythemia vera, smokers, high altitude, cardiovascular disease, renal cell carcinoma and other erythropoietin-producing neoplasms, stress, hemoconcentration/dehydration

Decreased in:

Anemias, hemolysis, chronic renal failure, hemorrhage, failure of marrow production

RED BLOOD CELL DISTRIBUTION WIDTH (RDW)

Normal RDW and...

Elevated MCV: aplastic anemia, preleukemia
Normal MCV: normal, anemia of chronic disease, acute blood loss or hemolysis, CLL, CML, nonanemic enzymopathy or hemoglobinopathy

Decreased MCV: anemia of chronic disease, heterozygous thalassemia

Elevated RDW and...

Elevated MCV: vitamin B12 deficiency, folate deficiency, immune hemolytic anemia, cold agglutinins, CLL with high count, liver disease

Normal MCV: early iron deficiency, early vitamin B12 deficiency, early folate deficiency, anemic globinopathy

Decreased MCV: iron deficiency, RBC fragmentation, Hb H. thalassemia intermedia

RED BLOOD CELL MASS (VOLUME)

Elevated in:

Polycythemia vera, hypoxia (smokers, high altitude, cardiovascular disease), hemoglobinopathies with high 2 B affinity, erythropoietin-producing tumors (renal cell carcinoma)

Decreased in:

Hemorrhage, chronic disease, failure of marrow production anemias, hemolysis

RETICULOCYTE COUNT

Elevated in:

Hemolytic anemia (sickle cell crisis, thalassemia major, autoimmune hemolysis, hemorrhage, postanemia therapy (folic acid, ferrous sulfate, vitamin B12))

Decreased in:

Aplastic anemia, marrow suppression (sepsis, chemotherapeutic agents radiation), hepatic cirrhosis, blood transfusion, anemias of disordered maturation (iron deficiency anemia, megaloblastic anemia, sideroblastic anemia, anemia of chronic disease)

RHEUMATOID FACTOR

Present in titer >1:20:

Rheumatoid arthritis, SLE, chronic inflammatory processes, old age, infection, liver disease

SMOOTH MUSCLE ANTIBODY (ANTI- SMOOTH MUSCLE ANTIBODY)

Present in:

Chronic active hepatitis (>1:80), primary biliary cirrhosis (<1:80), infectious mononucleosis

SODIUM (serum)

Increased in:

Excess loss of water...

-Conditions that cause loss via gastrointestinal tract (e.g., in vomiting), lung (hyperpnea), or skin (e.g., in excessive sweating)
-Conditions that cause diuresis (Diabetes insipidus, Nephrogenic diabetes insipidus, Diabetes mellitus, Diuretic drugs, Diuretic phase of acute tubular necrosis, Diuresis following relief of urinary tract obstruction, Hypercalcemic nephropathy, Hypokalemic nephropathy)

Excess administration of sodium (iatrogenic), e.g., incorrect replacement following fluid loss.

""Essential"" hypernatremia due to hypothalamic lesions

Decreased in (serum osmolality is decreased):

-Dilutional: (e.g., congestive heart failure, nephrosis, cirrhosis with ascites)
-Sodium depletion: (Loss of body fluids (e.g., vomiting, diarrhea, excessive sweating) with incorrect or no therapeutic replacement, diuretic drugs (e.g., thiazides); Adrenocortical insufficiency; Salt-losing nephropathy; Inappropriate secretion of antidiuretic hormone)
-Spurious (serum osmolality is normal or increased): (Hyperlipidemia; Hyperglycemia (serum sodium decreases 3 mEq/L for every increase of serum glucose of 100 mg/100 ml))

SUCROSE HEMOLYSIS TEST (sugar water test)

Positive in:

Paroxysmal nocturnal hemoglobinuria (PNH)

False positive: autoimmune hemolytic anemia, megaloblastic anemias

False negative: may occur with use of heparin or EDTA

T3 (TRIIODOTHYRONINE)

Decreased in:

Starvation, trauma, surgery, may be an adaptive response to illness,
drugs (PTU)

T3 RESIN UPTAKE (T3RU)

This test should be used only with a simultaneous measurement of serum
T4 to exclude the possibility that an increased T4 is due to an increase
in T4-binding globulin. Measurement of serum T-3 concentration should
be done by radioimmunoassay for diagnosis of hyperthyroidism

Increased in:

-Hyperthyroidism

-Certain drugs (e.g., testosterone, androgens, anabolic steroids,
prednisone, heparin, Dicumarol, salicylates, Butazolidin, penicillin,
Dilantin)

-Threatened abortion

-Infants (up to about age 2 months)

-Severe nephrosis

-Metastatic neoplasms

Decreased in

-Hypothyroidism

-Pregnancy (from about tenth week of pregnancy until up to 12th week
postpartum)

-Certain drugs (e.g., estrogens alone or in birth control pills, large
amounts of iodine, propylthiouracil in hyperthyroidism)

Normal in:

-Pregnancy with hyperthyroidism

-Nontoxic goiter

-Carcinoma of thyroid

-Diabetes mellitus

-Addison's disease

-Anxiety

-Certain drugs (mercurials, iodine)

Variable in:

Liver disease

T4, FREE (free thyroxine)

This determination gives corrected values in patients in whom the total
thyroxine (T-4) is altered on account of changes in serum proteins or in
binding sites. (Pregnancy; Drugs (e.g., androgens, estrogens, birth
control pills, Dilantin); Altered levels of serum proteins (e.g.,
nephrosis))

This is the best single screening test for thyroid dysfunction. It is paralleled by the free thyroxine factor.

Increased in:

- Hyperthyroidism
- Hypothyroidism treated with thyroxine -Very ill euthyroid patients (frequently)

Decreased in:

- Hypothyroidism
- Hypothyroidism treated with triiodothyronine

THROMBIN TIME (TT)

Elevated in:

Thrombolytic and heparin therapy, DIC, hypofibrinogenemia, dysfibrinogenemia

THYROID STIMULATING HORMONE (TSH)

Elevated in:

Hypothyroidism, drugs (haloperidol, chlorpromazme, metoclopramide, domperidone), TSH antibodies, pituitary resistance to thyroid hormone

Decreased in:

Hyperthyroidism, acute medical illness, drugs (dopamine, corticosteroids, bromocriptine, levodopa, pyridoxine), hyponatremia, malnutrition

Normal in:

Cushing's syndrome
Acromegaly
Pregnancy at term

THYROXINE-BINDING GLOBULIN (TBG)

Increased in:

- Pregnancy
- Excess TBG, genetic or idiopathic -Hypothyroidism (sorr-te patients)
- Certain drugs (estrogens, birth control pills)
- Gross iodine contamination
- Acute intermittent porphyria

Decreased in:

- Nephrosis and other causes of marked hypoproteinemia Deficiency of TBG, genetic or idiopathic
- Certain drugs (androgenic and anabolic steroids)

An increase of TBG is associated with an increase in PBI, BEI, and T-4 by column and a decrease in T-3; converse association for decrease of TBG.

THYROXINE (T4)

Increased in:

- Hyperthyroidism
- Pregnancy
- Certain drugs (estrogens, birth control pills, d-thyroxine, thyroid extract, TSH)

Decreased in:

-Hypothyroidism
-Hypoproteinemia
-Certain drugs (phenytoin sodium [Dilantin], triiodothyronine, testosterone, ACTH, corticosteroids)

Not affected by:

-Radiopaque substances for x-ray studies -Mercurial diuretics
-Nonthyroidal iodine

TRANSFERRIN

Elevated in:

Iron deficiency anemia, oral contraceptive administration, viral hepatitis

Decreased in:

Nephrotic syndrome, liver disease, hereditary deficiency, protein malnutrition, neoplasms, chronic inflammatory states, chronic illness thalassemia

TRIGLYCERIDES

Elevated in:

Hyperlipoproteinemias (Types I, IIb, III, IV, V), hypothyroidism, pregnancy, estrogens, acute MI, pancreatitis, alcohol intake, nephrotic syndrome, diabetes mellitus, glycogen storage disease

Decreased in:

Malnutrition, congenital abetalipoproteinemias, drugs (e.g., gemfibrozil, nicotinic acid, clofibrate)

UREA NITROGEN (BUN)

Elevated in:

-Drugs (aminoglycosides and other antibiotics, diuretics, lithium, corticosteroids), dehydration, gastrointestinal bleeding,
-Decreased renal blood flow (shock, CHF, MI), renal disease (glomerulonephritis pyelonephritis, diabetic nephropathy), urinary tract obstruction (prostatic hypertrophy)

Decreased in:

Liver disease, malnutrition, third trimester of pregnancy, overhydration

URIC ACID (serum)

Elevated in:

Renal failure, gout, excessive cell lysis (chemotherapeutic agents, radiation therapy, leukemia, lymphoma, hemolytic anemia), hereditary enzyme deficiency (hypoxanthine-guanine-phosphoribosyl transferase) acidosis, myeloproliferative disorders, diet high in purines or protein drugs (diuretics, low doses of ASA, ethambutol, nicotinic acid), lead poisoning, hypothyroidism, Addison's disease, nephrogenic diabetes insipidus, active psoriasis, polycystic kidneys

Decreased in:

Drugs (allopurinol, high doses of ASA, probenecid, warfarin, corticosteroid), deficiency of xanthine oxidase, SIADH, renal tubular

deficits (Fanconi's syndrome), alcoholism, liver disease, diet deficient in protein or purines, Wilson's disease, hemochromatosis

URINE 5-HYDROXYINDOLE-ACETIC ACID (URINE 5-HIAA)

Elevated in:

Carcinoid tumors, after ingestion of certain foods (bananas, plums, tomatoes, avocados, pineapples, eggplant, walnuts), drugs (MAO inhibitors, phenacetin, methyldopa, glycerol guaiacolate, acetaminophen, salicylates, phenothiazines, imipramine, methocarbamol, reserpine, metamphetamine)

URINE AMYLASE

Elevated in:

Pancreatitis, carcinoma of the pancreas

URINE BILE (BILIRUBIN, URINE)

Abnormal:

Urine bilirubin: Hepatitis (viral, toxic, drug-induced), biliary obstruction

Urine urobilinogen: Hepatitis (viral, toxic, drug-induced), hemolytic jaundice, liver cell dysfunction (cirrhosis, infection, metastases)

URINE CALCIUM

Elevated in:

Primary hyperparathyroidism, hypervitaminosis D, bone metastases multiple myeloma, increased calcium intake, steroids, prolonged immobilization, sarcoidosis, Paget's disease, idiopathic hypercalciuria renal tubular acidosis

Decreased in:

Hypoparathyroidism, pseudohypoparathyroidism, vitamin D deficiency vitamin D-resistant rickets, diet low in calcium, drugs (thiazide diuretics, oral contraceptives), familial hypocalciuric hypercalcemia, renal osteodystrophy

URINE CATECHOLAMINES

Elevated in:

Pheochromocytoma, neuroblastoma, severe stress

URINE CHLORIDE

Elevated in:

Corticosteroids, Bartter's syndrome

Decreased in:

Chloride depletion (vomiting, diuretics), colonic villous adenoma

URINE COPPER

Increased in:

Wilson's disease

URINE CORTISOL, FREE

Elevated:
Refer to CORTISOL (serum)

URINE CREATININE (24 hr)

NOTE: Useful test as an indicator of completeness of 24 hr urine collection.

URINE GLUCOSE (qualitative)

Present in:
Diabetes mellitus, renal glycosuria (decreased renal threshold for glucose), glucose intolerance

URINE HEMOGLOBIN, FREE

Present in:
Hemolysis (with saturation of serum haptoglobin binding capacity and renal threshold for tubular absorption of hemoglobin)

URINE HEMOSIDERIN

Present in:
Paroxysmal nocturnal hemoglobinuria (PNH), chronic hemolytic anemia, hemochromatosis

URINE INDICAN

Present in:
Malabsorption secondary to intestinal bacterial overgrowth

URINE KETONES (semiquantitative)

Present in:
DKA, alcoholic ketoacidosis, starvation, isopropanol ingestion

URINE METANEPHRINES

Elevated in:
Pheochromocytoma, neuroblastoma, drugs (caffeine, phenothiazines, MAO inhibitors), stress

URINE MYOGLOBIN

Present in:
Severe trauma, hyperthermia, polymyositis/demmatomyositis, carbon monoxide poisoning

URINE NITRITE

Present in:
Urinary tract infections

URINE OCCULT BLOOD

Positive in:

Trauma to urinary tract, renal disease (glomerulonephritis, pyelonephritis), renal or ureteral calculi, bladder lesions (carcinoma, cystitis), prostatitis, prostatic carcinoma, menstrual contamination, hematopoietic disorders (hemophilia, thrombocytopenia), anticoagulants, ASA

URINE OSMOLALITY

Elevated in:

SIADH, dehydration, glycosuria, adrenal insufficiency, high-protein diet

Decreased in:

Diabetes insipidus, excessive water intake, IV hydration with D5W acute renal insufficiency, glomerulonephritis

URINE pH

Elevated in:

Bacteriuria, vegetarian diet, renal failure with inability to form ammonia, drugs (antibiotics, sodium bicarbonate, acetazolamide)

Decreased in:

Acidosis (metabolic, respiratory), drugs (ammonium chloride, methenamine mandelate), diabetes mellitus, starvation, diarrhea

URINE POTASSIUM

Elevated in:

Aldosteronism (primary, secondary), glucocorticoids, alkalosis, renal tubular acidosis, excessive dietary potassium intake

Decreased in:

Acute renal failure, potassium-sparing diuretics, diarrhea, hypokalemia

URINE PROTEIN (quantitative)

Elevated in:

Renal disease (glomerular, tubular, interstitial), CHF, hypertension, neoplasms of renal pelvis and bladder, multiple myeloma, Waldenstrom's macroglobulinemia

URINE SODIUM (quantitative)

Elevated in:

Diuretic administration, high sodium intake, salt-losing nephritis, acute tubular necrosis, vomiting, CHF, hepatic failure. Addison's disease, SIADH, hypothyroidism

URINE SPECIFIC GRAVITY

Elevated in:

Dehydration, excessive fluid losses (vomiting, diarrhea, fever) x-ray contrast media, diabetes mellitus, CHF, SIADH, adrenal insufficiency, Decreased fluid intake

Decreased in:

Diabetes insipidus, renal disease (glomerulonephritis, pyelonephritis), excessive fluid intake or IV hydration

URINE VANILLYLMANDELIC ACID (VMA)

Elevated in:

Pheochromocytoma, neuroblastoma, ganglioblastoma, drugs (isoproterenol, methocarbamol, levodopa, sulfonamides, chlorpromazine), severe stress, after ingestion of bananas, chocolate, vanilla, tea, coffee

Decreased in:

Drugs (MAO inhibitors, reserpine, guanethidine, methyldopa)

VDRL

Positive test:

Syphilis, other treponemal diseases (yaws, pinta, bejel)

NOTE: A false-positive test may be seen in patients with SLE and other autoimmune diseases, infectious mononucleosis, atypical pneumonia, malaria, leprosy.

VISCOSITY

Elevated in:

Monoclonal gammopathies (Waldenstrom's macroglobulinemia, multiple myeloma), hyperfibrinogenemia, SLE, rheumatoid arthritis, polycythemia, leukemia

γ -GLUTAMYL TRANSFERASE (GGT; GAMMA-GLUTAMYL TRANSFERASE)

Elevated in:

Chronic alcoholic liver disease, neoplasms (hepatoma, metastatic disease to the liver, carcinoma of the pancreas), SLE, CHF, trauma, nephrotic syndrome, sepsis, cholestasis. drugs (phenytoin, barbiturates)

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