HIGH YIELD USMLE

Abnormal Lab Values

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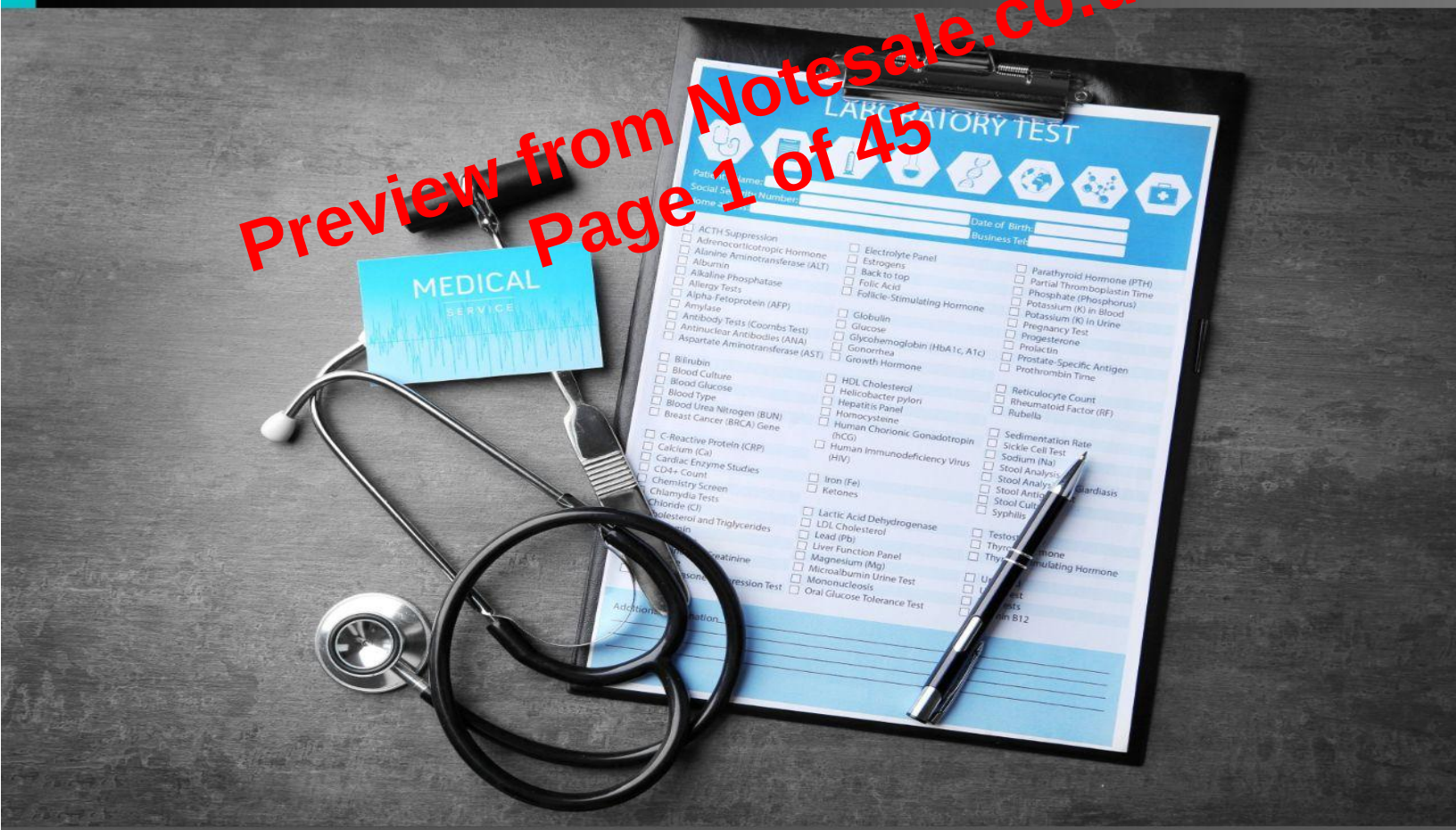
Differential Diagnosis

- Last-minute review before medical board exams
- Faster recall and maximum retention in minimum time
- Save time on real exams and improve test-taking strategies



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HealthWiz

- ↑ glucose, ↑ ketones in blood and urine, ↑ anion gap, ↓ HCO3-, ↑ k+, leukocytosis in type 1 DM: DKA
- ↑ glucose, normal pH, ↑ k+, high serum osmolarity (> 320 mOsm/kg), in type 2 DM: Hyperosmolar coma
- ↓ ACTH, ↑ cortisol, ↑ glucose, ↑ Na2+, ↑HCO3- : 1ˆhypercortisolism (Cushing syndrome)
- ↓ ACTH, ↑ cortisol, B/L adrenal atrophy: Exogenous corticosteroids
- ↑ ACTH, ↑ cortisol: ACTH-secreting pituitary adenoma (Cushing disease), paraneoplastic (ectopic) ACTH secretion (eg, small cell lung cancer, bronchial carcinoids)
- ↑↑ ACTH, ↑↑ MSH (hyperpigmentation), ↓↓cortisol, after B/L adrenalectomy: Nelson syndrome
- ↓ ACTH, ↓ cortisol: 2° hypocortisolism due to pituitary insufficiency & Tertiary adrenal insufficiency due to chronic exogenous steroid use, precipitated by abrupt withdrawal.
- ↑ ACTH, ↓ cortisol, ↓ glucose, ↓ Na2+, ↓HCO3-: 1ˆhypocortisolism due to adrenal insufficiency (Addison disease)- (atrophic adrenal), Congenital adrenal hyperplasia due to 17,21,11- B-hydroxylase and 3-OH- steroid dehydrogenase enzyme defect (Hyperplasia of B/L adrenal glands)
- ↑ Na2+, ↑HCO3, ↓ K+, ↑ pH (metabolic alkalosis):
    - 1° hyperaldosteronism (conn syndrome, **S**yndrome of **A**pparent **M**ineralocorticoid **E**xcess, CAH (11-B- hydroxylase))
    - 2° hyperaldosteronism (Renal artery stenosis, renin-secreting tumor, ectopic renin-producing tumor)

- ↑ homocysteine, normal methylmalonic acid, RBC macrocytosis, hypersegmented neutrophils: Folate deficiency
- ↑ homocysteine, ↑ methylmalonic acid, RBC macrocytosis, hypersegmented neutrophils: vitamin B12 deficiency
- RBC macrocytosis, hypersegmented neutrophils ↑ orotic acid with hyperammonemia: Orotic aciduria
- ↑ LDH, ↑ reticulocytes, ↑ unconjugated bilirubin, ↓ haptoglobin, ↑ schistocytes: Intravascular hemolysis
- ↑ LDH, ↑ reticulocytes, ↑ unconjugated bilirubin, no hemoglobinuria/hemosiderinuria: Extravascular hemolysis
- ↓ reticulocyte count, Pancytopenia, ↑ EPO: Aplastic anemia
- ↑ MCHC, ↓ mean fluorescence of RBCs in eosin 5-maleimide (EMA) binding test, + osmotic fragility test. Normal to low MCV with an abundance of RBCs: Hereditary spherocytosis
- The blood smear shows RBCs with Heinz bodies and bite cells: G6PD deficiency
- Normocytic anemia, Increases levels of 2,3-BPG: Pyruvate kinase deficiency
- Coombs ⊖ hemolytic anemia, pancytopenia, Pink/red urine, and CD55/59 ⊖ RBCs on flow cytometry: Paroxysmal nocturnal hemoglobinuria
- Hb electrophoresis: ↓↓ HbA, ↑ HbF, ↑↑ HbS. Peripheral smear: crescent-shaped RBCs and Howell-Jolly bodies: Sickle cell anemia
- The blood smear shows hemoglobin Crystals inside RBCs and target cells: HbC disease
- normocytic anemia, Coombs ⊕, and Spherocytes and agglutinated RBCs on peripheral smear: Autoimmune hemolytic anemia

- white pseudomembrane in the esophagus on endoscopy: Esophagitis due to candida
- Positive Sudan stain on stool examination: fecal fat/sign of Malabsorption
- Eosinophilic globule in the liver: Councilman body (viral hepatitis, yellow fever), represents hepatocyte undergoing apoptosis
- Mucin-filled cell with peripheral nucleus: “Signet ring” (gastric carcinoma)
- intracytoplasmic eosinophilic inclusions of damaged keratin filaments in the liver cell: Mallory body (alcoholic liver disease)
- Triglyceride accumulation in liver cell vacuoles: Fatty liver disease (alcoholic or metabolic syndrome)
- Infiltration of eosinophils in the esophagus often in atopic patients: Eosinophilic Esophagitis
- absence of ganglion cells on rectal suction biopsy: Hirschsprung disease
- Noncaseating granulomas and lymphoid aggregates in terminal ileum: Crohn's disease
- Villous atrophy, crypt hyperplasia, and intraepithelial lymphocytosis in distal duodenum and upper jejunum: Celiac disease
- PAS ⊕ foamy macrophages in intestinal lamina propria and mesenteric nodes: Whipple disease
- Specialized intestinal metaplasia: replacement of nonkeratinized stratified squamous epithelium with intestinal non-ciliated columnar epithelium in distal esophagus: Barrett Esophagus
- Non-ciliated columnar cells of stomach replaced with intestinal cuboidal cell: Atrophic gastritis (Pernicious anemia)

- Podocyte fusion or “effacement” on electron microscopy: Minimal change disease (child with nephrotic syndrome)
- “Spikes” on basement membrane, “dome-like” subepithelial deposits: Membranous nephropathy (nephrotic syndrome)
- “Tram-track” appearance of capillary loops of glomerular basement membranes on light microscopy: Membranoproliferative glomerulonephritis
- Cellular crescents in Bowman's capsule: Rapidly progressive (crescentic) glomerulonephritis
- “Wire loop” glomerular capillary appearance on light microscopy: Diffuse proliferative glomerulonephritis (usually seen with lupus)
- The linear appearance of IgG deposition on glomerular and alveolar basement membranes: Goodpasture syndrome
- “Lumpy bumpy” appearance of glomeruli on immunofluorescence: Poststreptococcal glomerulonephritis (due to deposition of IgG, IgM, and C3)

Hematology

- Basophilic nuclear remnants in RBCs: Howell-Jolly bodies (due to splenectomy or nonfunctional spleen)
- Basophilic stippling of RBCs: Lead poisoning or sideroblastic anemia
- Giant B cells with bilobed nuclei with prominent inclusions (“owl’s eye”): Reed-Sternberg cells (Hodgkin lymphoma)

- Epidermal hyperplasia (↑ spinosum): Acanthosis (e.g. Acanthosis nigricans, psoriasis)
- Epidermal hyperplasia, hyperkeratosis, koilocytosis: Verrucae (wart)
- Keratin pearls on a skin biopsy: Squamous cell carcinoma
- Separation of keratinocytes, “row of tombstones” on H&E stain and Reticular pattern around epidermal cells in Immunofluorescence (IF): Pemphigus Vulgaris
- Skin blisters containing eosinophils & Linear pattern at the epidermal-dermal junction on Immunofluorescence (IF): Bullous pemphigoid
- Sawtooth infiltrate of lymphocytes at the dermal-epidermal junction on IF, associated with Hepatitis C: Lichen Planus
- “Palisading” (aligned) nuclei on skin biopsy: Basal cell carcinoma
- Keratin “pearls on skin biopsy: Squamous cell carcinoma

Reproductive system

- Dysplastic squamous cervical cells with “resinoid” nuclei and hyperchromasia: Koilocytes (HPV: predisposes to cervical cancer)
- Disarrayed granulosa cells arranged around collections of eosinophilic fluid: Call-Exner bodies (granulosa cell tumor of the ovary)
- The glomerulus-like structure surrounding vessel in germ cells: Schiller-Duval bodies (yolk sac tumor)
- Rectangular, crystal-like, cytoplasmic inclusions in Leydig cells: Reinke crystals (Leydig cell tumor)

About Author

Meet the author of "Physical Signs and Differential Diagnosis: A Comprehensive Last Minute Review Guide for Medical Exams," who has been tutoring medical students, graduates, and residents for medical exams like USMLE Step 1, 2 CK, 3, CCS, biostatistics for the last 4 years.

With extensive experience in medical research and publications, the author's goal is to provide up-to-date medical knowledge and accessories to help you excel in your medical journey. The author understands the challenges faced by medical students and professionals during exam preparations and aims to provide an alternative way of revising exam materials in this comprehensive guide.

If you need further assistance, scan the QR code below to access online services from the author. With the author's expertise and support, you can feel confident and prepared for your medical exams.

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