

BODY FLUID ANALYSIS

Test	Pleural		Peritoneal		Pericardial		Synovial	
	Normal (transudate)	Abnormal (exudates)	Normal (transudate)	Abnormal (exudates)	Normal (transudate)	Abnormal (exudates)	Normal (transudate)	Abnormal (exudates)
Amylase		2x serum: pancreatitis, esophageal rupture, carcinoma		Increased in pancreatic ascites and GI perforations	Of little diagnostic value			
Appearance & volume	Clear/straw-colored	Milky: chylous or pseudo-chylous Reddish: see cells below Turbid: lipid or WBCs Purulent: empyema Foul smell: anaerobic Bloody: neoplasm or membrane damage Anchovy paste: amebiasis	Clear/straw-colored	Turbid: infection Green: bile Blood-streaked: trauma, intestinal disorders, malignancy Chylous or pseudo-chylous: trauma, lymph obstruction	Clear/straw-colored: 10-50 ml present	Turbid or blood-streaked Milky – chylous or pseudo-chylous	Clear, colorless to pale yellow	Yellow, turbid; inflammation white, cloudy; may contain crystals
Total protein	< 3.0	> 3.0	< 3.0	> 3.0 ulcerative colitis	Of little diagnostic value	> 6.0 indicates abnormal effusion	< 3.0	>3.0; arthritis, gout
Fluid/serum TP ratio	< 0.5	> 0.5		> 0.5 suggests malignancy	Of little diagnostic value			
LD	< 200	> 200		Elevated in malignancy	Of little diagnostic value	> 300 indicates malignancy	Same as Serum	Higher than Serum; RA, gout, infection
Fluid/serum LD ratio	< 0.6	> 0.6		> 0.6 suggests malignancy	Of little diagnostic value			
CEA				10 suggests malignancy CEA ordered to correlate with cytology results		CEA ordered to correlate with cytology results		
Fluid/serum CEA ratio			> 1	< 1				
Glucose		< 30: rheumatoid effusion < 50: TB, empyema, carcinoma, infection		< 60 Decreased in tubercular peritonitis and malignancy	Of little diagnostic value	< 60-80 may indicate disease	Not more than 10mg/dL higher than blood drawn simultaneously	20-100 mg/dL less than blood; Infection
Uric Acid							Equivalent to Serum	> 8mg/dL indicates gout
Cholesterol	< 45-60 mg/dl	> 45-60 mg/dl						

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pH	~ 7.4	< 7.3 infectious 6.3 in cancer 7.3 patient requires chest tube drainage 6.0: possible introduction of gastric fluid through ruptured esophagus		May be decreased in infections	Of little diagnostic value			
Triglycerides		> 110 mg/dl: Increased in chylous effusion < 50 mg/dl: pseudochylous effusion		Increased in chylous ascites	Of little diagnostic value			
Cells: WBC	< 1000	> 1000: Neutrophils increase in bacterial infection, pancreatitis, or pulmonary infarction Lymphocytes: increase in TB, viral infections, malignancy, LE	< 500 Mononuclear in cirrhosis	> 500 > PMNs in acute bacterial, mononuclear in chronic infections, eosinophils in eosinophilic enteritis	Normal counts are of no diagnostic value	> 1000 w/increase in neutrophils indicates bacterial infection		
Cells: RBC	< 10,000 (may indicate pleural effusion)	> 10,000: malignancy, pleural infarction, trauma, TB		Large amount suggests neoplasm, TB, pancreatitis, endometriosis, mesenteric thrombosis, trauma, visceral perforation				
Fluid/serum cholesterol ratio	< 0.3	> 0.3						
Bilirubin ratio	< 0.6	> 0.6						
Serum/ascites albumin gradient	> 1.1	< 1.1						

References:

Communique, "Practical Guide to the Analytical Validation of Body Fluid Chemistry Testing". Mayo Medical Laboratories, March/April 2013. Darci, R. Block, PhD
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