

Laboratory evaluation of plasma proteins and enzymes

1. Laboratory results of an adult male patient with fever are as follows:

serum total protein: 70 g/l;

A/G quotient: 1;

WBC: 15 G/l;

serum electrophoresis:

albumin: 50% (↓)

α_1 : 12% (↑)

α_2 : 15% (↑)

β : 10%

γ : 13%

IgG: 10 g/l (normal)

IgA: 1.3 g/l (normal)

IgM: 1 g/l (normal)

ESR: 30 mm/h

The above alterations are characteristic of what type of reaction? Please mention some of the positive and negative acute phase proteins!

2. A 50-year-old male patient is admitted to the department of medicine. He has massive edemas and heavy proteinuria.

BP: 130/70 mmHg

A/G quotient: 0.66

total serum protein: 50 g/l

globulins:

α_1 : 3% (normal)

α_2 : 15% (↑)

β : 30% (↑↑)

γ : 13%

total cholesterol: 8.3 mmol/l

CRP: normal

serum complement: decreased.

What is the most likely diagnosis?

3. Mr. X has a long-standing history of heavy ethanol consumption. What are the characteristic changes of these plasma components: serum total protein, A/G quotient, albumin, immunoglobulins, mASAT, ASAT, ALAT, GGT?

What is the range of these enzyme alterations?

Pathophysiology lab questions

4. Evaluation of the plasma proteins of a 50-year-old male patient gives the following results:

total serum protein: 90 g/l

A/G quotient: 0.38

albumin: 27%

globulins:

α_1 : 4% (normal)

α_2 : 6% (normal)

β : 8% (normal)

γ : 55% (↑↑↑)

acute phase reactants are normal

serum Ca^{++} : 2.71 mmol/l

uric acid: 708 $\mu\text{mol/l}$

Anti-IgG and anti-kappa antibodies are strongly positive.

What is the most likely diagnosis and what diagnostic procedure would you order?

5. Mrs. Y has got the following laboratory results

serum total protein: 50 g/l

A/G quotients: 0,75

globulins:

α_1 : 6 % (↑)

α_2 : 13 % (↑)

β : 10 % (normal)

γ : 28 %

IgG: 14 g/l (normal)

IgA: 2 g/l (normal)

IgM: 3,7 g/l (↑)

CRP: ↑

ANA: +; RF (latex): +; SMA: +

ESR: 30 mm/h.

What is the most likely diagnosis?

6. The plasma AFP level was found to be abnormal on screening a pregnant woman. What do you think this means, and what other tests should be done? What is the significance of an abnormal AFP level in a man or non-pregnant woman?

Pathophysiology lab questions

7. A patient seeks evaluation for rapid loss of body weight; there is no alcohol consumption in the history.

Laboratory findings:

serum bilirubin 60 $\mu\text{mol/l}$ (mostly conjugated)

GGT: 150 U/l

ALAT: 30 U/l

serum alpha-fetoprotein (AFP) is markedly elevated.

What is the most likely diagnosis and what other diagnostic procedures would you order?

8. A 22-year-old student has rhinitis recurring every autumn. His mother has got the same problem since she was a child.

Laboratory findings:

Eo: 5%

össz IgE: $\uparrow\uparrow$.

What is the most likely diagnosis? How can you confirm your diagnosis?