

Clinical Significance:

Hyperglycemia: (FBS > 100 mg/dL ; PPBS > 140 mg/dL)

- deficiency or resistance to insulin (Diabetes Mellitus)
- hyperactivity of thyroxine, cortisol, adrenaline, growth hormone, glucagon
- side effects of drugs like thiazide diuretics, glucocorticoids (steroids).

Hypoglycemia: < 50 mg/dL

- insulin overdose during treatment of diabetes mellitus
- insulin secreting tumours of β -cells of pancreas
- Drug induced (e.g. \Rightarrow oral hypoglycemic agents)
- hypofunctioning of thyroid, pituitary, adrenal cortex (Addison's Disease)
- Prolonged starvation, severe exercise
- Inherited enzyme deficiencies (Von Gierke's disease)

Increased Creatinine Clearance:

- muscular dystrophy
- hypercatabolic states
- Starvation

Decreased Creatinine Clearance:

- Advanced renal failure

Increase in Blood Urea:

- Prerenal causes - Dehydration
 - Shock
 - severe burns
 - Haemorrhage
- Renal causes - Acute & chronic glomerulonephritis
 - Later stages of nephrosis
 - Polycystic kidney
 - Malignant hypertension
 - Hydronephrosis
- Postrenal causes - enlargement of prostate gland
 - Stones in urinary tract & bladder
 - Tumours of bladder

Decrease in blood urea:

- severe liver disease (viral hepatitis)
- Decreased protein intake

Hyperproteinemia:

- Dehydration: both albumin & globulin increase
A/G ratio remains unaltered
- due to increase of one of the globulins as in multiple myeloma (monoclonal increase); albumin conc. remain same/slightly reduced
- polyclonal increase of gamma globulins in infections, chronic liver disease.

Hypoproteinemia:

Due to decreased anabolism:

- Malnutrition (Kwashiorkor)
- Liver disease (cirrhosis & severe anemia)
- Defective absorption from GIT (malabsorption syndrome, pancreatic diseases)

Due to increased catabolism:

- Thyrotoxicosis
- Uncontrolled diabetes mellitus
- Prolonged febrile diseases
- Trauma

Due to increased loss:

- Kidney diseases (nephrotic syndrome)
- Severe burns
- Haemorrhage

Hemo dilution (false hypoproteinemia):

- Pregnancy
- Prolonged steroid therapy

Albuminemia: Plasma albumin is almost completely absent.

Bisalbuminemia: Two equal albumin peaks in electrophoretogram

Reversed A:G ratio:

- Liver cirrhosis
- Nephrotic syndrome
- Multiple myeloma

Increase in Albumin:

- Dehydration

Decrease in Albumin:

- Increased loss: nephrotic syndrome, protein losing enteropathy, burns, severe haemorrhage
- Reduced synthesis: liver disease, malnutrition, malabsorption
- Increased catabolism: fever, recovery from sepsis/surgery.
- oestrogen therapy, IV fluid therapy, prolonged bed rest