

Multiple Choice Questions- Acid Base Balance

Q.1- A person was admitted in a coma. Analysis of the arterial blood gave the following values: PCO_2 16 mm Hg, HCO_3^- 5 mmol/l and pH 7.1. What is the underlying acid-base disorder?

- a) Metabolic Acidosis
- b) Metabolic Alkalosis
- c) Respiratory Acidosis
- d) Respiratory Alkalosis

Q.2- In a man undergoing surgery, it was necessary to aspirate the contents of the upper gastrointestinal tract. After surgery, the following values were obtained from an arterial blood sample: pH 7.55, PCO_2 52 mm Hg and HCO_3^- 40 mmol/l. What is the underlying disorder?

- a) Metabolic Acidosis
- b) Metabolic Alkalosis
- c) Respiratory Acidosis
- d) Respiratory Alkalosis

Q.3- A young woman is found comatose, having taken an unknown number of sleeping pills an unknown time before. An arterial blood sample yields the following values: pH – 6.90, HCO_3^- 13 meq/liter, PaCO_2 68 mmHg. This patient's acid-base status is most accurately described as

- a) Uncompensated metabolic acidosis
- b) uncompensated respiratory acidosis
- c) simultaneous respiratory and metabolic acidosis
- d) respiratory acidosis with partial renal compensation

Q.4- A student is nervous for a big exam and is breathing rapidly, what do you expect out of the followings

- a) Metabolic Acidosis
- b) Metabolic Alkalosis
- c) Respiratory Acidosis
- d) Respiratory Alkalosis

Q.5- A 45- year-old female with renal failure, missed her dialysis and was feeling sick, what could be the reason ?

- a) Metabolic Acidosis
- b) Metabolic Alkalosis
- c) Respiratory Acidosis
- d) Respiratory Alkalosis

Q.6- An 80-year-old man had a bad cold. After two weeks he said, “It went in to my chest, I am feeling tightness in my chest, I am coughing, suffocated and unable to breathe!” What could be the possible reason?

- a) Metabolic Acidosis
- b) Metabolic Alkalosis
- c) Respiratory Acidosis
- d) Respiratory Alkalosis

Q.7- A post operative surgical patient had a naso gastric tube in for three days. The nurse caring for the patient stated that there was much drainage from the tube that is why she felt so sick. What could be the reason?

- a) Metabolic Acidosis

- b) Metabolic Alkalosis
- c) Respiratory Acidosis
- d) Respiratory Alkalosis

Q.8- The p H of the body fluids is stabilized by buffer systems. Which of the following compounds is the most effective buffer system at physiological pH ?

- a) Bicarbonate buffer
- b) Phosphate buffer
- c) Protein buffer
- d) All of the above

Q.9- Which of the following laboratory results below indicates compensated metabolic alkalosis?

- a) Low p CO₂, normal bicarbonate and, high pH
- b) Low p CO₂, low bicarbonate, low pH
- c) High p CO₂, normal bicarbonate and, low p H
- d) High pCO₂, high bicarbonate and High pH

Q.10- The greatest buffering capacity at physiological p H would be provided by a protein rich in which of the following amino acids?

- a) Lysine
- b) Histidine
- c) Aspartic acid
- d) Leucine

Q.11- Which of the following is most appropriate for a female suffering from Insulin dependent diabetes mellitus with a pH of 7.2, HCO₃⁻17 mmol/L and pCO₂-20 mm HG

- a) Metabolic Acidosis
- b) Metabolic Alkalosis
- c) Respiratory Acidosis
- d) Respiratory Alkalosis

Q.12- Causes of metabolic alkalosis include all the following except.

- a) Mineralocorticoid deficiency.
- b) Hypokalemia
- c) Thiazide diuretic therapy.
- d) Recurrent vomiting.

Q.13- Renal Glutaminase activity is increased in-

- a) Metabolic acidosis
- b) Respiratory Acidosis
- c) Both of the above
- d) None of the above

Q.14- Causes of lactic acidosis include all except-

- a) Acute Myocardial infarction
- b) Hypoxia
- c) Circulatory failure
- d) Infections

Q.15- Which out of the following conditions will not cause respiratory alkalosis?

- a) Fever
- b) Anxiety
- c) Laryngeal obstruction
- d) Salicylate toxicity

Q.16- All are true about metabolic alkalosis except one-

- a) Associated with hyperkalemia
- b) Associated with decreased ionic calcium concentration
- c) Can be caused due to Primary hyperaldosteronism
- d) Can be caused due to Renin secreting tumor

Q.17- Choose the incorrect statement out of the followings

- a) Deoxy hemoglobin is a weak base
- b) Oxyhemoglobin is a relatively strong acid
- c) The buffering capacity of hemoglobin is lesser than plasma protein
- d) The buffering capacity of Hemoglobin is due to histidine residues.

Q.18- Carbonic anhydrase is present at all places except-

- a) Gastric parietal cells
- b) Red blood cells
- c) Renal tubular cells

d) Plasma

Q.19- All are true for renal handling of acids in metabolic acidosis except

- a) Hydrogen ion secretion is increased
- b) Bicarbonate reabsorption is decreased
- c) Urinary acidity is increased
- d) Urinary ammonia is increased.

Q.20- Choose the incorrect statement about anion gap out of the followings

- a) In lactic acidosis anion gap is increased
- b) Anion gap is decreased in Hypercalcemia
- c) Anion gap is decreased in Lithium toxicity
- d) Anion gap is decreased in ketoacidosis.

Q.21- Excessive citrate in transfused blood can cause which of the following abnormalities?

- a) Metabolic alkalosis
- b) Metabolic acidosis
- c) Respiratory alkalosis
- d) Respiratory acidosis

**Answers- 1-a, 2-b, 3-c, 4-d, 5-a, 6-c, 7-b, 8-a, 9-d, 10-b, 11-a, 12-a, 13-c, 14-d, 15-c,
16-a, 17-c, 18-d, 19-b, 20-d, 21-a**