AFIP MINIBOARD EXAMINATION
MAY 2008

CLINICAL PATHOLOGY

1. Features of <u>primary</u> hyperparathyroidism include:

    1. ↑ Calcium and phosphorous absorption from intestine
    2. ↑ Calcium:phosphorous ratio in blood
    3. ↓ Release of calcium and phosphorous from the bone
    4. ↓ Calcium excretion in kidney
    5. ↑ Phosphorous excretion in kidney

    A. 1, 2

    B. 3, 4, 5

    C. 1, 2, 5

    D. 1, 2, 4, 5

    E. All of the above

2. All of the following are major negative acute-phase proteins EXCEPT:

    A. Albumin

    B. Transferrin

    C. Prealbumin

    D. Ceruloplasmin

    E. Alpha 2-macroglobulin

3. Which of the following are hepatocellular leakage enzymes?

        1. ALT
        2. AST
        3. LDH
        4. SDH
        5. GDH

A.   1, 2

B.   1, 3, 5

C.   1, 2, 3, 4

D.   1, 2, 3, 4, 5

E.   1, 2, 4

4. All are true concerning large granular cell (LGL) lymphoma/leukemia EXCEPT:

A.   May have NK cell or T-cell receptors

B.   Arise commonly in abdominal organs

C.   LGLs usually "home" to epithelial sites

D.   Usually occur in young animals

E.   Are high-grade malignancies

5. Blood gas sample from a 10-year-old pony:

pH	7.25	(Reference Interval 7.32-7.44)
HCO_3	40 mEq/L	(Reference Interval 24-30)
PCO_2	55 mmHg	(Reference Interval 36-46)
PO_2	88 mmHg	(Reference Interval 94)
TCO_2	38 mEq/L	(Reference Interval 22-33)

The most likely acid-base abnormality is:

A. Metabolic acidosis uncompensated

B. Metabolic acidosis with partial compensation

C. Respiratory acidosis with partial compensation

D. Respiratory acidosis uncompensated

E. Respiratory alkalosis uncompensated

6. Which of the following conditions is not associated with increased serum iron?

1. Hemolytic anemia
2. Glucocorticoid excess in the dog
3. Glucocorticoid excess in the ox
4. Renal disease
5. Nonregenerative anemia

A. 1

B. 1, 2

C. 2, 3

D. 3, 4

E. 3, 4, 5

7. Which of the following is false concerning creatine kinase (CK)?

  A. CK is a cytosolic enzyme with highest activity in skeletal muscle, cardiac muscle, and brain

  B. CK is a dimeric enzyme with two isoenzymes - CK1 (found in muscle) and CK2 (found in brain)

  C. Hemolysis results in false increases in CK activity

  D. Puppies have higher levels of CK activity than adult dogs

  E. The plasma half-life of CK is short

8. The test of choice to diagnose iatrogenic hyperadrenocorticism is:

  A. Low-dose dexamethasone suppression test

  B. High-dose dexamethasone suppression test

  C. ACTH stimulation test

  D. Plasma cortisol measurement

  E. Urine cortisol/creatinine ratio

9. Monoclonal gammopathy is associated with all of the following EXCEPT:

  A. Ehrlichiosis

  B. Amyloidosis

  C. Lymphoid neoplasia

  D. Immune-mediated disease

  E. Feline infectious peritonitis

10. In which feline disease does ALP activity increase to a greater extent than GGT:

    A.   Cholestasis

    B.   Hepatic lipidosis

    C.   Hyperthyroidism

    D.   Biliary disease

    E.   A and B

11. All of the following diseases or conditions cause hypomagnesemia EXCEPT:

    A.   Prolonged anorexia

    B.   Grass tetany in cattle

    C.   Blister beetle poisoning in horses

    D.   Hypoproteinemia

    E.   Milk fever in cattle

12. Which of the following is true concerning dogs with primary hyperparathyroidism:

    1. Serum PTH is high or normal in affected dogs
    2. Affected dogs show increased urinary excretion of phosphorus
    3. Hypophosphatemia is severe
    4. Increased serum alkaline phosphatase levels may be seen
    5. Isosthenuria is common in affected dogs

    A.   1

    B.   1, 2

    C.   1, 2, 3

    D.   1, 2, 3, 4

    E.   1, 2, 3, 4, 5

Use the following information to answer questions 13-15 below.

Signalment and history: 1-year-old female Labrador Retriever with lethargy, depression, ataxia, vomiting, dehydration, oliguria

Laboratory data:

Hematology

		(Normal range)
Hct	56.5	35-57
Hb	18.6	11.9-18.9
RBC	7.93	4.95-7.87
MCV	71.3	66-77
MCH	23.5	21.0-26.2
MCHC	32.9	32.0-36.3

RBC morphology: normal

Platelets   357,000

WBC	29.7
Seg	26.4 (89%)
Band	2.07 (7%)
Lymph	0.6 (2%)
Mono	0.6 (2%)
Eos	0
Baso	0

Serum Chemistry

		(Normal range)
BUN	75	8-28
Creatinine	5.7	0.5-1.7
T. protein	8.2	5.4-7.5
Albumin	3.1	2.3-3.1
ALP	83	1-114
ALT	28	10-109
Glucose	141	76-119
Sodium	143	142-152
Potassium	5.5	3.9-5.1
Chloride	99	110-124
Total CO_2	5	14-26
Anion gap	39	5-17
Calcium	8.6	9.1-11.7
Phosphorus	10.2	2.9-5.3

Blood Gases

pH	7.237	(7.31-7.42)
HCO_3	11.5	(17-24)
PCO_2	27.1	(29-42)

Urinalysis (cystocentesis)

color	light yellow
turbidity	clear
sp grav.	1.011
pH	6.0
protein	1+
glucose	1+
ketones	neg
bilirubin	neg
blood	neg
Sediment	Ca oxalate
	Crystals

13. Which of the following is the best characterization of this dog's acid/base status?

    A.   Metabolic acidosis with partial respiratory compensation

    B.   Metabolic alkalosis with respiratory compensation

    C.   Respiratory acidosis

    D.   Respiratory alkalosis

14. The increased anion gap indicates

    A.   Renal failure

    B.   Titration acidosis

    C.   Decreased glomerular filtration rate

    D.   Dehydration

    E.   Prerenal azotemia

15. What is the most likely cause of this dog's renal disease?

    A.   Hypovitaminosis D

    B.   Coumarin toxicity

    C.   Ethylene glycol toxicity

    D.   Chronic glomerulonephritis

    E.   Renal amyloidosis

16. All of the following can cause hypoglycemia EXCEPT:

    A.   Sepsis

    B.   Hyperthyroidism

    C.   Hemangiosarcoma

    D.   Hypoadrenocorticism

    E.   Hyperlipidemia in ponies

17. In dogs, hyperamylasemia may occur in which of the following diseases:

    1. Pancreatitis
    2. Renal disease
    3. Gastrointestinal disease
    4. Hepatobiliary disease

    A.   1

    B.   1, 2

    C.   1, 2, 3

    D.   1, 2, 3, 4

    E.   3, 4

18. A lack of platelet dense granules is characteristic of:

    A.   Glanzmann's thrombasthenia

    B.   Severe type 1 vWD

    C.   Chédiak-Higashi syndrome

    D.   Canine thrombopathia

    E.   Thrombocytopenia of Cavalier King Charles Spaniels

19. Blood gas sample from a 5-year-old Greyhound:

pH	7.50	(Reference Interval 7.31-7.42)
HCO_3	30 mEq/L	(Reference Interval 17-24)
PCO_2	35 mmHg	(Reference Interval 29-42)
PO_2	94 mmHg	(Reference Interval 85-95)

The most likely acid-base abnormality is:

A.   Metabolic alkalosis uncompensated

B.   Metabolic alkalosis with partial compensation

C.   Respiratory alkalosis with partial compensation

D.   Mixed metabolic acidosis and alkalosis

E.   Respiratory alkalosis uncompensated

20. Which of the following is true concerning thyroid hormones in mammals:

A.   In the thyroid glands of dogs and cats, approximately 80% of the secreted thyroid hormone is T3 and 20% is T4

B.   T3 may be deiodinated to reverse T3 by the 5'-deiodinase enzyme

C.   While T3 is the most active form of thyroid hormone, serum T3 concentrations correlate poorly with clinical thyroid dysfunction

D.   Hypothyroidism is confirmed if serum total T4 concentration is decreased

E.   Negative feedback control of TSH secretion is mediated by bound fractions of T3 and T4 only at the pituitary level

21. All of the following can cause hypercholesterolemia EXCEPT:

    A.   Hypothyroidism

    B.   Diabetes mellitus

    C.   Hyperadrenocortism

    D.   Nephrotic syndrome

    E.   Protein losing enteropathy

22. Coagulation testing results from a dog:

TEST	PATIENT	REFERENCE RANGE
Platelet Count	450	211-621
APTT	15.3	13.1-17.4
PT	17.1	5.8-7.9
TT	5.6	4.2-7.0

The most likely diagnosis is

    A.   Factor VII deficiency

    B.   Factor VIII deficiency

    C.   Factor IX deficiency

    D.   Prekallikrein deficiency

    E.   Congenital fibrinogen deficiency

23. The following laboratory changes in a dog are most consistent with what disease?

Folate Normal
Cobalamin Decreased
TLI   Decreased

A. Proximal small intestinal disease

B. Distal small intestinal disease

C. Diffuse small intestinal disease

D. Bacterial overgrowth

E. Exocrine pancreatic insufficiency

24. Blood chemistry and gas analysis from a 2-year-old Belgian Malinois

Sodium 125 mEq/L (Reference Interval 142-152)
Potassium 2.5 mEq/L (Reference Interval 3.9-5.1)
Chloride 75 mEq/L (Reference Interval 110-124)
TCO_2 29 mEq/L (Reference Interval 14-26)
Anion gap 26 mEqL (Reference Interval 5-17)
pH   7.50   (Reference Interval 7.31-7.42)
HCO_3 27 mEq/L (Reference Interval 17-24)
pCO_2 32.6 mmHg (Reference Interval 29-42)
pO_2 90 mmHg (Reference Interval 85-95)

The most likely acid-base abnormality is:

A. Metabolic alkalosis uncompensated

B. Metabolic alkalosis with partial compensation

C. Mixed metabolic acidosis and metabolic alkalosis

D. Respiratory acidosis with partial compensation

E. Metabolic acidosis with partial compensation

25. Which of the following crystals are never found in the urine of normal animals:

A. Calcium phosphate

B. Ammonium biurate

C. Calcium oxalate dihydrate

D. Cholesterol

E. Cystine