

2010 Miniboard Exam- Clinical Pathology

1. All of the following findings are noted in cats with hyperthyroidism EXCEPT:

- A. Anemia
- B. Increased creatinine
- C. Hyperglycemia
- D. Elevated ALP (bone isoenzyme)
- E. Elevated ALP (liver isoenzyme)

2. One notes the following findings in an equine endometrial cytologic preparation: Many squamous epithelial cells and few eosinophils. What is the most likely diagnosis?

- A. Chronic endometritis
- B. Hypersensitivity reaction of the endometrium to sperm
- C. Pneumouterus
- D. Vaginal contamination with concurrent pneumovagina
- E. A normal mare endometrium in estrus

3. The following data is collected on the effectiveness of a diagnostic test

True positives: 540

False negatives: 60

False positives: 280

True negatives: 1,120

What is the Predictive value of a positive test result (PV+):

- A. 95%
- B. 72%
- C. 66%
- D. 33%
- E. 10%

4. What best defines the diagnostic **sensitivity** of a test for detecting a disease:

- A. The frequency with which a test is negative in patients that do not have the disease
- B. The frequency with which a test is positive in patients that do have the disease
- C. The frequency with which a test correctly classifies an animal as having or not having the disease
- D. The probability that a positive test result indicates that the animal has the disease
- E. The probability that a negative test result indicates that the animal does not have the disease

5. In cats with nasopharyngeal lymphoma, which of the following findings is NOT present:

- A. Hypercalcemia
- B. Panhypoproteinemia
- C. Hypocholesterolemia
- D. Moderate lymphopenia
- E. Mature neutrophilia

6. Which of the following can cause an increased anion gap?

- A. Hypoalbuminemia
- B. Hypercalcemia
- C. Hyperphosphatemia
- D. Multiple myeloma
- E. Hypermagnesemia

7. All of the following statements regarding hepcidin are true EXCEPT:

- A. Binds iron exporting protein, ferroportin

- B. Inhibits absorption of dietary iron
- C. Increases import of iron into macrophages
- D. Expression increases in response to inflammation
- E. Expression decreases in response to iron deficiency

8. A leukemoid reaction is characterized by all of the following EXCEPT:

- A. Neutrophilia
- B. Marked left shift
- C. Early myeloid precursors
- D. Reactive lymphocytes
- E. Normoblastemia

9. Which of the following ALP fractions is resistant to heat or levamisole:

- A. L-ALP
- B. Total ALP
- C. C-ALP
- D. B-ALP
- E. P-ALP

10. With canine corticosteroid hepatopathy, all are expected to be abnormal EXCEPT:

- A. Alanine aminotransferase
- B. Alkaline phosphatase, heat resistant isoenzyme
- C. Alkaline phosphatase, levamisole resistant isoenzyme
- D. Ammonia
- E. Aspartate aminotransferase

11. Which of the following is an accurate assessment of erythrocyte regenerative capacity in birds:

- A. Ring form reticulocytes
- B. Metarubricytes
- C. Aggregate reticulocytes
- D. Erythroplastids
- E. Punctate reticulocytes

12. Which is the most likely diagnosis given the following values in a dog:

Hematology		Reference Range
Hct (%)	34	37-55
Hgb (g/dl)	15	12-18
RBC (x10 ⁶ /ul)	4.0	5.5-8.5
MCV (fl)	85	60-72
MCHC (g/dl)	30	34-38
Retics (/ul)	20	<60

- A. Copper deficiency anemia
- B. Iron deficiency anemia
- C. Folate deficiency
- D. Erythrocyte agglutination
- E. Regenerative anemia

13. Which is the most appropriate next step given the following case in an adult dog with impaired platelet function:

Hematology		Reference Range
Nucleated cell count (/ul)	24200	6000 - 17000
Neutrophils (/ul)	11000	3000-11500
Bands (/ul)	100	0-300
Lymphocytes (/ul)	12000	1000-4800
Monocytes (/ul)	1000	200-1400
Eosinophils (/ul)	100	100-1200

- A. Begin treatment for lymphoma
- B. Bone marrow aspirate
- C. Urine culture
- D. Ehrlichia canis titer
- E. Endotracheal wash

14. Which of the following is the most reliable test/value to diagnose DIC in the dog:

- A. Thromboelastography
- B. PTT
- C. FDP
- D. D-dimer
- E. Protein C

15. A 10 year old canine with prolonged PT, normal PTT, normal platelet count, and normal bleeding time most likely has which of the following:

- A. Hemophilia A
- B. Early rodenticide poisoning
- C. Glanzmann's thrombasthenia
- D. DIC
- E. Dysfibrinogenemia

16. A urine sample with many ammonium urate crystals may prompt evaluation for which of the following:

- A. Portosystemic shunt
- B. Ampicillin treatment
- C. Ethylene glycol toxicity
- D. Alkaline urine
- E. Hyperthyroidism

17. Urinary calculi from guinea pigs are most often composed of:

- A. Calcium oxalate
- B. Dried blood
- C. Struvite
- D. Calcium carbonate** (JAVMA 2009, 234, 2, 214-20)
- E. Apatite

18. Which is the most likely diagnosis in a 2 year old mare with the following data:

TEST	RESULT	REF INTERVAL
Sodium	133	133-145 mEq/L

Chloride	120	100-111 mEq/L
Potassium	2.1	2.2-4.6 mEq/L
TCO2	10	24-34 mEq/L
Urea	22	14-27 mg/dL
Creatinine	1.5	1-2 mg/dL

- A. Liver failure
- B. Small intestinal obstruction
- C. Renal tubular acidosis
- D. Ethylene glycol toxicity
- E. Grain overload

19. 10 year old female spayed DSH. What is the most likely diagnosis given the following data:

TEST	RESULT	REF INTERVAL
Sodium	155	150-160 mEq/L
Chloride	123	118-128 mEq/L
Potassium	3.3	4-5.8 mEq/L
Urea	28	14-31 mg/dL
Creatinine	1.8	1-2 mg/dL

- A. Hyperaldosteronism
- B. Renal failure
- C. Metabolic acidosis
- D. Aortic thromboembolism with tissue ischemia
- E. Urinary tract obstruction

20. 3 year old Holstein cow. What is the most likely diagnosis given the following data:

TEST	RESULT	REF INTERVAL
Sodium	115	133-145 mEq/L
Chloride	50	100-111 mEq/L
Potassium	2.2	2.2-4.6 mEq/L
TCO2	39	24-34 mEq/L
Calcium	13	11-13.7 mg/dL
Phosphorus	3	1.9-4.1 mg/dL
Urea	161	14-27 mg/dL
Total Protein	8.2	5.8-7.6 g/dL
Albumin	3.9	2.7-3.7 g/dL

- A. Grain overload
- B. Esophageal obstruction
- C. Bovine renal failure
- D. Selenium deficiency
- E. Massive tissue necrosis

21. 10 year old mare. What is the most likely diagnosis given the following data:

TEST	RESULT	REF INTERVAL
Sodium	135	133-145 mEq/L
Chloride	103	100-111 mEq/L
Potassium	2.2	2.2-4.6 mEq/L
TCO2	26	24-34 mEq/L
Calcium	7	11-13.7 mg/dL
Phosphorus	4.2	1.9-4.1 mg/dL
Magnesium	1.2	2-4 mg/dl
Urea	30	14-27 mg/dL
Creatinine	2.1	1-2 mg/dL
Urine specific grav	1.006	1.020-1.030

- A. Hyperparathyroidism
 - B. Renal failure
 - C. Ruptured bladder
 - D. Hypervitaminosis D
 - E. Blister beetle poisoning
22. Which of the following test results can be used to diagnose diabetes mellitus in cats:
- A. Decreased fructosamine
 - B. Increased TLI
 - C. Increased PLI
 - D. Increased glycated albumin
 - E. None of the above

23. 12 year old MC Arabian horse. Choose the best primary diagnosis based on the following data.

TEST	RESULT	REF INTERVAL
Sodium	132	138-148 mEq/L
Chloride	93	101-111 mEq/L
Potassium	4.2	3.2-4.6 mEq/L
TCO2	28	24-34 mEq/L
Glucose	264	65-100 mg/dL
Urea	20	14-27 mg/dL
Creatinine	1	1-2 mg/dL
Urine specific grav	1.016	1.020-1.030
Cortisol pre-dex	120	36-81 nmol/L
Dexamethasone suppression test - 4 hr post	134	<30 nmol/L
Dexaemthasone suppression test - 24 hr post	145	< 30 nmol/L

- A. Hyperadrenocorticism
- B. Diabetes mellitus
- C. Diabetes insipidus
- D. Hypopituitarism
- E. Hyperthyroidism

24. Choose the best interpretation of the following data in a 10 year old MC canine.

(tT4 = total thyroxine ; fT4 = free thyroxine ; TSH = thyroid stimulating hormone concentration; TgAA = thyroglobulin autoantibody)

TEST	RESULT
tT4	Decreased
fT4	Increased
TSH	Increased
TgAA	Negative

- A. Primary autoimmune hypothyroidism
- B. Secondary hypothyroidism
- C. Sick euthyroidism
- D. Healthy dog
- E. Tertiary hypothyroidism

25. Which is the most likely xenobiotic-induced finding in the following investigative toxicology study in rats. Control rats were administered vehicle and the high dose rats were administered a high dose of a xenobiotic for 7 days (data from rats at other dosage levels is not included here).

Dose Group	Animal	Weight (g)	BUN mg/dl	Creat mg/dl	Tbili mg/dl	ALP IU/I	GGT IU/I	ALT IU/I	AST IU/I	CK IU/I
Control (C)	C1	350	16.2	0.48	0.09	330	2.9	56.0	124	977
	C2	400	15.0	0.5	0.09	332	2.9	57.0	111	688
	C3	300	18.5	0.55	0.09	328	2.9	48.0	91	643
	C4	325	17.3	0.55	0.09	442	2.9	45.0	91	592
High Dose (D)	C5	375	15.0	0.55	0.09	218	2.9	42.0	74	161
	Mean	350	16.4	0.53	0.09	330	2.9	49.6	98.2	612
	D1	250	18.4	0.49	0.09	210	2.9	45.0	101	592
	D2	300	31.3	0.37	0.09	265	2.9	50.5	110	600
	D3	200	16.2	0.49	0.09	155	2.9	48.0	93	584
	D4	235	15.5	0.49	0.09	213	2.9	42.0	86	277
	D5	275	11.6	0.49	0.09	207	2.9	39.5	116	903
	Mean	250	18.6	0.47	0.09	210	2.9	45.0	101	592

- A. Hepatotoxicity
- B. Muscle necrosis
- C. Cholestasis
- D. Renal insufficiency
- E. Anorexia