Lectures of Clinical pathology I

Fourth year students

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by

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Vet. Int. & Prev. Med.

The clinical pathology-I class scheduale

THEORY

Week	Theory	Time
1	Introduction : terminology and concepts	1h
2-4	Clinical hematology (leukocytes and erythrocytes)	3h
5	Platelets functions, abnormalities and diagnosis of bleeding disorders and hemostate system	1h
6-7	Examination of bone marrow	2h
8-9	Anemia & leukemia	2h
10	Clinical biochemistry :Basic principles, total proteins,ketones,urea,minerals levels	1h
11	Liver function tests	1h
12-13	Kidney function tests	2h
14	Water electrolytes and acid base imbalances	1h
15	Exam.	1h
	Final exam	

PRACTIC

Week	Practice	Time
1	Collection of different samples, Lab insutrumintation & lab. Safety	2h
2	Erythrocytes count , Reticulocytes count, Packed cell volume and Hb determination	2h
3	MCV,MCH,MCHC and Determine anemia	2h
4	Leukocytes parmeters	
5	ESR determination, Platelets function abnormalities , Bleeding and clotting time	2h
6	Bone marrow exam. and Determine leukemia	2h
7	Blood & Lymph smear examination	2h
8	Liver function tests	2h
9	mineral levels and proteins	2h
10	Examination of urine (physical and chemical)	2h
11	Examination of urine (microscopical examination	2h
12	Exam.	2h
	Final exam	Final exam

expectation:

- **on class: out class is 1:2**

evaluation:

- **theory 25 marks**
- **practice 10 marks**
- **includd quzes and homework (not exceed 5 marks)**
- **Final exam. T40+P20= 60 marks**

Text books:

- **Latimer 2011 Duncan and Prasse's Veterinary laboratory medicine-clinical pathology 5th ed.**

References:

- **Steven L. and Scott, Michael A 2008 Fundamentals of Veterinary Clinical Pathology, 2nd edition**
- **Weiss and Wardrop 2006 Schalm's Veterinary Hematology 6th ed.**
- **Coles 1986 vet cl path.**

Introduction

Clinical pathology:

Is a study that deal with the use of laboratory methods (clinical chemistry, microbiology, hematology…….) for the diagnosis and treatment of diseases.

Equipment for the basic clinical pathology laboratory:

1. Light Microscope
2. Microhematocrit centrifuge
3. Refractometer
4. Hand tally
5. Timer
6. Hemocytometer
7. Sahli set

Equipment for the complete clinical pathology laboratory:

1. Spectrophotometer
2. Water path
3. Hematology analyzer
4. Chemistry analyzer
5. Blood gas pH unit
6. Balance
7. Incubator
8. Vacutainer tubes

Vacutainer tubes:

1-An evacuated glass tube containing a premeasured vacuum to ensure that specified volume of blood is drawn.

2-A sterile single used needle suitable for drawing blood after venipuncture.

3-A specially designed holder may be used to secure the needle during venipuncture and insertion into the tube stopper.

Anticoagulants :

1 EDTA = dipot. & disod. Salts of ethylene diamine tetra acetic acid

Mode of action: as chelating agents by combining with calcium.

Advantages: preserve stain ability and morphological character of leukocytes

2 Ammonium & potassium oxalate

Advantages : inexpensive

Disadvantages : cellular distortion within first hour after collection

3 Heparin :

Mode of action :interfere with conversion of prothrombine to thrombin

Disadvantages: affecting leukocyte stain ability

4 Sodium and pot. Citrate:

Note commonly adapted for haematology

Sampling:

1.	Sample	Charecters	Preserve	Uses
2.	**Blood**	No longer 6-12	EDTA	CBC
		Critical 24h	Without anticoagulant	To prepare **serum**
3.	**Serum**		Freez	Serological test, Glucose
4.	**Blood smear**	Thick		Babesia
		Thin	Fixed by absolute methanol	Theileria
		Wet	Fresh blood	Leishmania
5.	**Direct smear**	From eye, ear, pus…	Coled or freeze	Chemistry, microbiology, cytology
6.	**Skin scraping**		Fresh or 10%NaOH	Mange, ring worm
7.	**Fecal sample**	3-5 g in clean container	Direct examined or cold	GIT parasites
		1-2 g in steril container	Cold or freeze	Microbiology
8.	**Embryo**	Whole embryo	Freeze	Microbiology
9.	**Tissue samples**	Lymph node, intestine, placenta, bone marrow	Formaline 10% Freeze	Histopathology Histochemistry and immunology
10.	**Fluids**	Peritoneal Synovial Cerebrospinal	Cold or freeze	Microbiology Cytology
11.	**Discharge**	Nasal, lacremal, uterine, vaginal and saliva.	Cold or freeze	Microbiology Cytology Chemistry
12.	**Urine**	Normal flow	Fresh sample	Physical , cytology