Chapter 8 - Lesson 5

Special Examinations

Diagnostic Imaging

Ultrasonography (ultrasound) is an imaging technique that utilizes sound waves of sector and linear scanners to produce images (sonograms) of various organs and tissues. Motion of scanned tissues is detectable on the screen. Ultrasound is a common diagnostic tool in private veterinary practices for examinations of an animal’s heart, bladder, tendons, and uterus. Conditions, such as pregnancy, tissue swellings, cysts, abscesses, calculi, and tumors may be detected.

Computerized axial tomography (CAT) scan is a clinical diagnostic tool that uses x-ray emissions to produce cross-sectional images of animal body parts. Another cross-sectional scanning technique is magnetic resonance imaging (MRI) that uses energy in the form of radio waves to make images on any plane of the animal’s body. The advantage of CAT and MRI scans over conventional radiography is the differentiation of various soft tissue and bone densities. The high cost of the equipment limits the use of these scanners in veterinary and medical institutions.

Thermography is the use of a heat sensitive scanner that detects the temperature of the skin and muscles as it relays a red color image onto a screen. The image of various temperature levels of soft tissues are illustrated by different shades of red. Inflammatory reactions, as indicated by the imaged heat, may be associated with strains, sprains, bruises, wounds, and infections of animals’ skin and body muscles.
Diagnostic Endoscopy

Endoscopy is internal, visual examination of tissues, bone joints, and hollow organs by utilizing an endoscopic instrument. The “camera” is inserted through a body orifice to the site being examined. By looking through the scope, normal and abnormal conditions are visually observed. These instruments are used to examine the upper and lower respiratory system from the nasal passages to the bronchi; the alimentary canal through the mouth and rectum; the urinary tract through the urethra; the female reproductive tract through the vagina; and bone joint cavities through an incision.

Diagnostic Cardiogram

An electrocardiogram (ECG, EKG) is required for diagnosis and differentiation of most heart arrhythmias, which are disturbances in heart rate and rhythm. Arrhythmias can be divided into bradyarrhythmias (slow heart rate) and tachyarrhythmias (fast, irregular heart rate). An EKG provides information to determine therapy that will focus on the origin and type of the abnormal rhythm.

Clinical Chemistry

Clinical diagnosis can be confirmed through blood-chemical analysis. Tests are commonly performed to examine the function of the kidney, liver, and pancreas. Kidney function tests include analysis of blood urea nitrogen (BUN) and creatinine.

Liver function tests measure serum glutamic pyruvic transaminase (SGPT) and serum alkaline phosphatase (SAP) cellular enzymes. Tests for serum lipase and amylase enzymes evaluate pancreatic function.

Cytology

Tissue Biopsy and Aspirate

Tissue samples collected by biopsy and aspiration techniques are useful in making definitive diagnoses of inflammatory lesions, neoplastic lesions, infectious organisms, and estrous cycle stages. In making a specific diagnosis, slide smears and special stains are microscopically examined to identify the cells of pathogens and tissues.

Body Fluid Aspirate

Fluids aspirated from body cavities can be analyzed to support a clinical diagnosis of inflammation, blood disorder, cardiovascular disturbance, infection, neoplasia, or lymphatic disturbance. The body fluid that is classified as transudate or exudate is centrifuged, and stained smears are made of the sediment. Cytology is used to differentiate cells present in the collected sample.

References


Questions

1. Describe the use of endoscopy.
2. Describe the use of ultrasonography.
3. Describe the use of tissue biopsy.
4. Describe the use of thermography.

Matching

5. _____ Tissue aspirate
6. _____ Ultrasound
7. _____ BUN
8. _____ ECG
9. _____ Gastroscopy

a. Diagnostic imaging
b. Diagnostic endoscopy
c. Cytology
d. Clinical chemistry
e. Diagnostic cardiogram