



Popular Article

Collection, Preservation and Dispatch of Samples During Vetero-legal Necropsy – A Special Reference to Wildlife

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Abstract

Necropsy is the procedure to diagnose the disease after the death of animals. The purpose of necropsy is to identify the cause of death and to prevent the further spread of disease in the flock. To prevent the disease transmission from wild to domestic livestock, necropsy must be needed. Post mortem has to be conducted only by a registered veterinarian or pathologist. Examination should be done after receiving the legal request from police officer or from the executive magistrate. The specimens for veterolegal necropsy should be collected for histopathological, toxicological and parasitological examination. The specimens, thus collected are preserved by chemical preservation, freezing and refrigeration method for further investigation. The samples must be sent along with the details of clinical signs, lesions, tentative diagnosis and treatment given to the animal.

Introduction

Postmortem or necropsy examination is one of the most important for diagnosis of disease in domestic animals as well as in wild animals. The purpose of necropsy is to identify the cause of death of herd/ flock and to prevent the further spread of disease. Post mortem has to be conducted only by a registered veterinarian or pathologist. Examination should be done after receiving the legal request from police officer or from the executive magistrate.

Pre-Cautions to Be Followed

- ❖ Post mortem examination should not be done in a closed premise.
- ❖ Normal saline should not be used for transporting the specimens from the place of necropsy to laboratory investigation.
- ❖ Highly putrefied carcass should be handled with care to avoid the cross transmission of Infectious agents.

- ❖ Necropsy procedure in case of **Tiger, Peacock** should be priorly intimated to the local police and should be done under the supervision of Government officials.
- ❖ In case of carcass suspected for Anthrax, necropsy should be avoided.

Veterolegal necropsy includes collection, preservation and dispatch of samples.

1. Collection of samples

Samples should be collected based on the lesions showing and disease conditions. Samples like blood, tissues, dung material, body fluids can be collected.

Specimens for histopathology

Collect the tissue sample as soon as possible to avoid autolysis of organs. To avoid crushing of tissue sample BP blade can be used to collect. Collect **0.5 cm** thickness of representative sample in 10% formalin. The tissue contains predominant gross lesion including adjoining normal portion of an organ at approximately 80:20.

Example: Sample of brain can be collected for West Nile fever in Macaques.

Specimens for bacteriology and mycology:

Samples for bacteriological examination must be collected aseptically. Sterile cotton or calcium alginate swabs may be used to collect samples like pus, heart blood and other body fluids. Swabs may be transported under refrigeration or immersed in semi solid bacteriological transport medium. Specimens of hair and skin scrapings for fungal examination are collected in glass vial or paper envelope. Care should be taken because some animal mycoses may be transmitted to humans.

Example:

Nasal swab can be collected for disease like pasteurellosis from Hare.

Skin scrapping should be collected for fungal disease like Dermatophytes from Dhole.

Specimens for Virology:

Samples for virological examination should be collected and transported under refrigeration condition. In the absence of refrigeration, it can be stored in **50 % buffered glycerine solution**.

Example: Brain samples are collected for Rabies to examine the Negri bodies in Fox and Coyotes.

Specimens for toxicology

Generous blocks of liver, kidney, stomach and intestinal contents should be collected for toxicological analysis. Blood and urine samples can also be collected. Specimens should be collected in clean wide mouthed, colorless glass or plastic containers fitted with glass stoppers of one litre capacity with clean leak proof jars. Aluminum or plastic may interfere with test for some toxins.

Submission of samples in suspected cases of poisoning for chemical analysis are as follows:

Suspected poison	Tissue/organ with quantity of samples		
ARSENIC	Liver (500 – 1000 mg)	Kidney (One)	Stomach Content
COPPER	Liver (500 – 1000 mg)		
INSECTICIDES (OP)	Oxalated Blood	Whole Blood (30 – 50ml)	Stomach Content
INSECTICIDES (Chlorinated)	Fat (200 mg)	Liver (500 – 1000 mg)	Stomach Content
LEAD	Hair (5 – 10g)	Liver (500 – 1000 mg)	Urine (50 ml)
CYANIDE	Stomach Content	Liver (500 – 1000 mg)	Oxalated Blood
NITRATE and NITRITE	Stomach contents	Whole blood (30 – 50 ml)	
RODENTICIDES	Stomach contents	Liver (500 – 1000 mg)	Urine (All available)
PHOSPHORUS	Stomach Content	Liver (500 – 1000 mg)	

Example: Detection of **plasma cholinesterase** level for OP poisoning in Wild Gaur.

Specimens for parasitology

Faces may be collected from rectum of a dead animal but in this instance an attempt should be made to estimate when the animal has been dead. The best specimens are collected from the ground as soon as they have been passed.

External parasites like tick, mites, lice, fleas and flies should be collected into small tube containing **70% ethyl alcohol**.

Example: Collection of dung sample in elephant which is suspected for *Fasciola jacksoni*.

A piece of diaphragmatic muscle should be taken from carnivores and wild boar for examination for *Trichinella spp.* infection.

2. Preservation of Samples

- Formalin preservation can be used for specimens for histopathological examination and for fluid preserved specimens.
- The collected samples for histopathology must be fixed in **10% buffered formalin** to preserve the cellular morphology and for later examination.
- Internal parasites like *Gastrodiscus secundus* in elephants can be stored and preserved in 70% ethyl alcohol or 10% buffered formalin.
- Refrigeration at 4°C is the best way to preserve samples over short periods exceptions to this include hair and nail, which are stable at room temperature.
- Freezing at -10°C is a good method for preserving specimens like legal evidence- Peacock Poisoning in Wildlife fringe areas.
- For preserving Blood sample, Sodium Fluoride (20mg/ml) or Sodium citrate and Mercuric mixture (5 + 0.1 mg/ml) can be used.
- Rectified spirit is commonly used as preservative for toxicological analysis. It is contraindicated in cases of suspected poisoning by alcohol, phosphorus, paraldehyde, acetic acid or carbolic acid and other drugs of phenol groups. The amount of spirit added to each vessel should be measured and the amount so added has to be written on the label affixed to the container. Methylated spirit may be used if rectified spirit is not available.
- **Saturated solution of common salt** is employed where rectified spirit is contraindicated.
- Thick polypropylene bags of various sizes ranging from 200 ml to 2 litre capacity can used to collect suspected fodder, hay, straw and feed

3. Dispatch of Samples

- The covering letter should contain animal details, clinical signs, treatment given, date of necropsy, name and the quantity of samples, details of seal, amount of the preservatives used,

postmortem findings, suspected poison/toxicant or tentative diagnosis along with a copy of First Information Report and a copy of request from the police.

- Write correct address with pin code on letter, if the material is sent through post.
- All the packets and bottles should be carefully sealed with sealing wax without any leakage. The seal used should be the same throughout, either a private seal or an official seal which is always kept in safe custody
- Mark the parcel ' Biological material', 'Handle with care', ' Glass material', 'Fragile' etc. to avoid damage to the parcel.
- Keep one copy of letter inside the parcel and another copy with specimen collector.
- Keep some cushioning material to prevent the damage of glasswares.
- The packed material may be sent through messenger for safer transport (to avoid any breakage in transit) or send them by railway parcel to the Chemical Examiner or Forensic Science Laboratory.

References

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