

Challenges In Forensic Veterinary Pathology

Dr. Anushri Tiwari, Dr. Prateek Mishra

(PhD. Scholar). Department of Veterinary Pathology
College of Veterinary Science and Animal Husbandry, NDVSU, Jabalpur (M.P.)

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Ramsey Clark quoted, *“The great and constant need of those who investigate homicide and practice forensic pathology or criminal law is a warm humanism.”*

“In veterinary forensics, medical expertise is used to gather evidence applicable in civil and criminal court cases, as well as insurance company investigations, that involve animals” says Dr. Stern. The forensic expert evaluates the autopsy results, in light of all available evidence and renders an opinion about the cause, manner and mechanism of death.

Forensic veterinary pathology has not yet been successfully established in our country. In fact, there is immense need of the subject specialty in the field conditions. With rising figures of animal cruelty in our country every day, it becomes the responsibility that the situation is dealt with the help of a veterinary forensic expert. The ongoing trend of the society where animal life has always been considered less valuable than a human life has also been the reason for the lagging behind of forensic veterinary pathology as a discipline. In the year 2016, over 24,000 animal cruelty cases were reported in the last three years by the government. The solidarity of the humans has led to disastrous ways of harming the innocent animals and the patterns of violence have also been modified for the worse whether it is shooting, beating, vehicle accidents, poisoning, feeding explosives via food, bestiality or any other cruelty.

The forensic veterinary pathology continues to face various challenges in the field scenarios as well as in the society. Veterinary world is fully loaded with species of every size and shape ranging from companion animals to livestock to wildlife and hence a single rule can't be applied on all the species and this complexity of multispecies of forensic veterinary pathology leads to confusion in all aspects. These varied animals of different body size, weight and surface areas will react to the inflammation and the wound healing processes differently. The PM changes duration will also differ with different species. Secondly, the

only people who get to deal with the veterolegal cases are the veterinary officers who lack formal training in forensics. There is no practice of sending the veterolegal cases to specialized veterinary pathologists such as in medicolegal cases to avoid faulty interpretations.

In addition to that, the cadavers presented for the examination supported by misleading anamnesis are often mutilated to the extent that it becomes difficult to analyse the time of death and age of wounds. Even the necropsy cases reach the putrefactive changes along with passing of rigor which makes it difficult to predict the antemortem and post-mortem changes. In this aspect, a forensic expert with a detailed knowledge of thanatochemistry (chemistry of death) can give a quantitative measurement to determine the post-mortem interval (PMI) using a scoring method for three post-mortem changes including hypostasis, rigidity and corneal turbidity. After death, many physiochemical changes such as algor mortis, rigor mortis, hypostasis and decomposition occur leading to the dissolution of all soft tissues. Corneal clouding occurs after death with an increase in its intensity until the cornea loses its turgor whether the eyelids remain open or not. These changes occur in a regular sequence and can be used to arrive at an approximate time of death.

Animals recovered from water bodies may or may not have drowned, thus, the challenges increase as forensic pathologist equipped with the knowledge about the ratio of normal lung weight/body weight which will always vary as per species, breed, age and body condition. The diatoms (unicellular algae) and electrolyte tests (elevated vitreous humor sodium levels in cases of salt water drowning and decreased levels in fresh water drowning) are also included in the ancillary testes for determination of drowning and requires expertise. However, a forensic expert must have an experience of field cases as it is not always necessary that the cause of death of an animal is due to the injuries or marks on the body. It is quite possible that the animal suffered an inter-current diseased state which will be revealed on detailed post-mortem examination and hence, the expert should have a precise knowledge of specific disease lesions.

The inconsiderate behaviour of the people towards animal and then covering up the story by implanting false evidences can also be clarified by a well-qualified veterinary

forensic expert. Evidence collection is not always practiced strictly in veterolegal cases which further delays the investigation. There are several instances where a veterinary officer might get confused regarding ante-mortem and post-mortem burns and wounds, toxicological cases etc. Often, there are only small body parts of the animal like bones, hair, teeth, flesh or horns/ antlers are found which make it difficult to identify the species where advanced practices like protein estimation, morphological study and identification via molecular techniques becomes essential for which highly equipped labs with all the facilities necessary for molecular diagnosis needs to be setup giving quicker results and for which the young veterinary students and researchers pursuing the pathology branch should be trained which can also pave the way for employment.

Countries still lack special dedicated courses or institutes which can train our vets to have a thorough knowledge regarding the forensic cases. Organizations such as the International Forensic Veterinary Sciences Association (IVFSA) and the North American Veterinary Community (NAVC) routinely offering workshops on veterinary forensic sciences needs to be founded in our country as well where the registered veterinarians can get knowledge of the subject in depth. Furthermore, insufficient veterinary-specific reference data and information regarding the forensic veterinary cases is a problem where record keeping of evidences and meticulous documentation of previous cases and its easier digital access can be of great help to the vets worldwide to deal with the forensic cases.

At last we can conclude that the challenging aspects of forensic veterinary pathology are enormous which can only be resolved with exhaustive efforts of the experts and budding pathologists worldwide. The veterolegal formalities and guidelines also need be strengthened to provide accurate and precise information relating to the crime scenes. Moreover, the large animal necropsy is always exhaustive and delays lab diagnostic procedures, hence, rapid diagnostic assays for various parameters needs to be developed where forensic experts can play their part. Support from concerned organizations by setting up veterinary forensic labs can be of greater help to provide training and practice to the learning vets.