THE EXOTIC SIDE OF CSI: FORENSICS IN NON-DOMESTICATED ANIMALS

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“CSI” – CRIME SCENE INVESTIGATION!

The very words conjure up a picture of murder, mystery, police officers, and poison analysis. Few would normally associate such activities—and all else that is part of modern forensic science—with contemporary veterinary practice. Nothing, however, could be further from the truth.1-3 Forensic veterinary medicine is here to stay!

So what is exactly is “forensic veterinary medicine”? It can be defined as the application of veterinary knowledge to the purpose of the law; it therefore can also concern such matters as civil actions, insurance claims, and allegations of professional misconduct.

Certain aspects of animal forensic work may be the responsibility of the specialist pathologist, toxicologist, or DNA technologist, but veterinary practitioners increasingly need to have some familiarity with the subject and to be able to deal adequately with a case when it is first presented.

SCOPE OF FORENSIC VETERINARY MEDICINE

There has been an unprecedented increase in litigation relating to animals over the past few years. Domesticated animals attract the majority of criminal cases at present and these usually concern such issues as ownership, provenance, aging and parentage, causes of ill-health or death, and health and welfare.

Exotic species, ranging from touracos to tarantulas, are increasingly the subject of litigation and here legal cases generally fall into the following categories.

Circumstances of Death

This category relates to the situation in which a dead animal is investigated with a view to determining the circumstances—cause, mechanism, and manner—of its death. Essentially one or more of the following questions is being asked about the dead animal:

- How did it die?
- Why did it die?
- When did it die?
- Where did it die?
- Who might have been involved?

Animal Welfare

In animal welfare cases the forensic veterinarian usually investigates whether an exotic animal is being (or has been) subjected to unnecessary pain, stress, neglect, or starvation.

Abuse

This is a field in which forensic evidence from veterinarians is becoming very important. These cases concern the links between child abuse and domestic violence.4 Although investigation of alleged assaults on domesticated animals is at present the main focus of such work, there is increasing evidence that attacks on exotic species may be associated with a propensity to be violent to human beings.

Conservation

Legal cases that fall in this category come under what is generally termed “wildlife crime” (see later)—that is, activities that threaten wild animals, plants, or their habitats and which constitute an offense under national, regional, or international law.5 The financial value of many exotic species means that they may be taken illegally from the wild, moved from one country to another, or kept in captivity without the necessary authorization.

Animals as Sentinels

Sometimes animals form part of a forensic investigation because they can provide important data that is relevant to other species. For example, pet birds may be found dead or dying in a house following a fire or explosion. Clinical examination, necropsy, or sampling of such birds can yield information as to why and when the accident occurred and possibly detect evidence of materials (chemicals or explosives) that might have been responsible.

APPLICATION TO EXOTICS

Exotic animals present particular challenges in forensic cases. Their wide anatomic, physiologic, and taxonomic diversity means that the veterinarian who is involved in such work must have some knowledge of comparative biology and of natural history. In an investigation identification of exotic species or their derivatives can depend as much upon such simple but skilled techniques as microscopical examination of hair, feathers or scales, as it may on the use of molecular techniques.

Important forensic needs such as aging of wounds and lesions are likely to be complicated in exotics by their disparate physiological features, such as whether the species is ectothermic or endothermic. Even the differentiation of ante-mortem lesions and post-mortem changes can present problems in some taxa and there appear to be few authoritative texts available to guide the veterinarian other than some work on certain selected species.6

In general, published information on forensic aspects of exotic animals is either sparse or nonexistent. This deficit is likely to be rectified as a result of the growth of interest in what is being termed “comparative forensic medicine.” This emerging discipline has been defined as being concerned with forensic studies on different vertebrate and invertebrate species of animal, including humans, and the application of such work to the provision of scientific information to judicial and other processes.1 Such a comparative approach is of particular relevance and potential value to those who are concerned with exotic species and free-living species but, because it also opens up possibilities for proper scientific study, is important to all who are involved in...
animal forensics. An urgent need, if the quality of evidence in animal forensic cases is to be improved, is good quality research, including the development and use of live, dead, and computer-generated models that can be used to test hypotheses and to develop improved investigative techniques.

THE VETERINARIAN AS A WITNESS

There are two scenarios whereby a veterinarian may become involved in a forensic case. The first of these is where he or she is invited to examine an animal or a sample or to give an expert opinion on a report. In such instances, before agreeing to accept the case, the veterinarian should consider whether:

- He or she wants to act as an expert witness
- The undertaking is feasible and realistic in terms of time and outlay and what is required of him or her.

The second scenario is when the veterinarian has no option, no choice. He or she may be a witness of fact (for example, on account of seeing an incident or dealing with the animal when it was first presented) or be called under a subpoena to give evidence. In such circumstances the veterinarian is committed to appearing in court or providing an oral/written statement.

Regardless of whether the veterinarian has agreed willingly to appear in a case involving exotic species or wildlife, the following guidelines are likely to prove useful:

- Familiarize yourself with the species of animal involved, in particular its anatomy, physiology, normal behavior, and diseases.
- Where your knowledge or experience is limited, be prepared a) to seek advice from others, including non-veterinarians, b) to carry out a full literature search, if necessary in different languages, and c) to extrapolate, with care, from similar species or previous cases.
- Proceed with caution and record everything you do, preferably in the presence of a colleague who can testify to your findings.

FORENSIC TECHNIQUES

In most exotic animal forensic cases investigation involves a combination of the following:

- A visit to the scene of the alleged crime and an assessment of what is seen or found
- Interviewing people who are, or are believed to be, involved
- Clinical examination of live animals
- Postmortem examination of dead animals
- Collection and identification of specimens, including derivatives and samples for laboratory testing
- Correct storage and dispatch of specimens for laboratory testing
- Laboratory tests

- Production of report(s)

Crime scene investigation, part of the title of this presentation, is, indeed, often an important component of forensic work with exotic species. Sometimes the crime scene is very similar to that portrayed in the CSI series—an area where an animal’s dead body has been found under suspicious circumstances, for example. The location needs to be cordoned and contained in the same way as it would if a human cadaver was under investigation. However, there are many variants. The advent of computer-generated criminal activity, which sometimes involves animals, brings to the crime scene a new and very different dimension! Scenes of crime that involve wildlife are often in isolated areas—for example, in forest or on mountains, where rare species have been killed, captured, or poached. Here the veterinarian needs ingenuity, adaptability, and a willingness to work in the field, often using portable equipment or a mobile laboratory.

Routine clinical and post-mortem veterinary diagnostic techniques have a major part to play in forensic investigations in animals. However, they usually have to be supplemented with a range of more specific tests that include laboratory tests (see later), radiography, ultrasonography and other imaging methods, and DNA technology. Forensic entomology can prove important in animal forensic investigations. Insects are the prime invertebrates of importance, as they are in human work, but millipedes, spiders, ticks and mites can play a part. The veterinarian must either have access to a person with experience of invertebrates or have such knowledge him/herself.

The collection, submission, processing, and storage of specimens (“evidence”) are of the utmost importance in legal cases. The samples as well as the results may need to be produced in court. Essential requirements are the use of standard techniques following established protocols, meticulous investigation, a reliable chain of custody (evidence), proper selection, labeling and transfer of samples, and accurate record-keeping.

Although forensic medicine offers exciting challenges, it is not seen by most academic institutions as a bona fide discipline within the veterinary curriculum and is rarely given recognition as a specialist subject. This lack of status, coupled with the shortage of literature and data, hampers the ability of the veterinarian to contribute much needed skills and knowledge.

The next few years are likely to see an escalation in lawsuits concerning exotic animals. This is attributable to various factors, among them an increasing tendency for owners of animals to resort to litigation, the financial value of many species, the global trade (some of it illegal) in wildlife, and greater public concern over conservation and environmental issues.

There are also likely to be more contested insurance claims and a greater tendency for owners of exotic species to threaten or to bring disciplinary proceedings against veterinarians who are perceived to provide inadequate or unprofessional services. These
developments all imply that the practitioner who is dealing with less familiar species must be better prepared. This means, in particular, ensuring that proper records are kept, that sound protocols and established chains of custody are followed, and that all in the practice are conscious of the potential of a legal action, when admitting, examining or treating suspect, unusual, or particularly valuable animals.

If the veterinary profession is to play its full part in forensic medicine, increased pressure needs to be put on professional bodies and regulatory authorities to recognize this new discipline and to provide adequate training and support for its advancement.

CONCLUSION

Forensic work can be fun and challenging. It introduces a new dimension to veterinary practice and to dealing with the myriad of species that constitute “exotics.” However, this area of work is not for the faint-hearted. It will bring the practitioner into contact with the less savoury aspects of human nature and in court is likely to expose him or her to strong, sometimes aggressive, interrogation and penetrating enquiry during cross-examination.

Nevertheless, this is all constitutes part of the judicial process and veterinarians, as professional people, have an essential and growing role to play in ensuring that justice is done. “CSI” is, therefore, very relevant to exotic animal practice and seems set to become even more so.

REFERENCES
2. Cooper JE, Cooper ME. Legal cases involving birds: the role of the veterinary surgeon. Vet Rec. 1991; 129:505-507