



PROFESSIONAL NOTE

Veterinary forensic medicine in Chile: a professional examination

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Forensic or legal medicine is a historic discipline formed to assist police and legal authorities in providing expert analysis in the fact-finding and adjudication process. It is traditionally concerned with the investigation of sudden and unexpected deaths (Dettmeyer et al. 2013, Madea 2014). It is a multifaceted field that involves several investigative skills, from evidence collection and observation to interpretation and determination. As a scientific discipline in constant evolution, it has seen incredible developments over time that have considerably improved forensic medicine, allowing better collaboration and validation of expert testimony (Madea 2014).

The successful prosecution of animal crimes has been considered a problem for a long time. Few investigators have had the tools to resolve these cases. Scientific professionals, including veterinarians, have filled essential roles in animal crime or other animal-related cases (Bailey 2016). In most countries, animal welfare laws exist that demand veterinary expertise. This demand is what drove the establishment of veterinary forensic medicine. Additional training in forensic sciences has allowed some veterinarians to grasp this specialty branch, transforming and modifying it to apply to cases where animals are victims or perpetrators. Without a doubt, it has been an emergent specialty in the veterinary community, becoming well-established and playing an indispensable role for animals in court.

What is veterinary forensic medicine?

Two decades ago, the idea of forensic medicine was alien in the minds of veterinarians, the police officers and

attorneys investigating an animal crime, and the animal owners themselves. The meaning of the phrase 'veterinary forensic medicine' had to be explained. In these early days, it was such an unfamiliar field that law enforcement agents were not investigating animal crimes, and prosecutors did not take legal action because they did not know how (Merck 2013). Nevertheless, the subject caught attention and interest.

Every new concept will be unfamiliar at first. However, due to the solid work of scientific professionals, the concept of veterinary forensic medicine can be described as the application or incorporation of knowledge about radiology, pathology, clinical medicine, and toxicology, among other veterinary disciplines, to provide support and evidence to the victims under the legal system. It has a close connection with human forensic medicine, sometimes working in partnership to examine cases of animal cruelty, human aggression against animals or humans, and even pursuing cases in which the sole witness to a homicide was the family pet (Newbery et al. 2016). Due to the recognized link between animal abuse, criminal behavior, and domestic violence, health professionals and politicians have recognized the need to address animal cruelty through careful case investigation (Intarapanich et al. 2016, Lockwood 2016). Other applications of this science include morbidity and mortality due to veterinary malpractice, pet-owner claims against veterinarians, and human-caused wildlife deaths.

Veterinary forensic medicine should be part of the curriculum at every college of veterinary medicine, but few universities currently offer the subject as an elective. Human medical schools across the globe teach forensics to

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their students within the first four years of education. This structure could be translated from human education and built into the veterinary learning schedule. Until high-quality veterinary forensic education becomes a part of the standard curriculum, veterinarians and veterinary students must independently acquire training, experience, and certification in forensics to be able to apply these skills when the time comes.

Forensic veterinarians may work in medicine, pathology, wildlife, radiology, toxicology, osteology, odontology, or other veterinary specialties; forensic entomology or botany; or case investigations (at the crime scene, usually a clinician, pathologist or police officer). As this list shows, several investigative methods lead to the resolution of veterinary forensic cases. Most of which involve a multidisciplinary team or approach that includes clinicians, toxicologists, entomologists, osteologists, and other specialists (Tauroo and Fitch 2016). In some situations, clinical veterinarians may work with veterinary pathologists on the postmortem examination of carcasses. Specialized knowledge is required for the handling and preservation of evidence, such as animal identification (e.g., microchip, collar, tag, leash), insects, hair, and fluid, blood or organ samples for histopathology or toxicology (Newbery and Munro 2011). The forensic entomology section of Chile's public police department has collaborated in animal abuse cases to identify insects found on the carcass to estimate the postmortem interval or gain additional information related to the victim. Per usual in the science sphere, successful investigations are about teamwork.

One fundamental difference between human and veterinary forensic medicine is the variety of species in each discipline. The differences in anatomy and applicable laws make it necessary to acquire further research and specific information or to be mentored by an experienced forensic veterinarian.

Animal abuse and neglect, which can cause anxiety, stress, or pain to the animal victims, are intolerable actions in ordinary society. However, the legal definition of animal cruelty and the laws that address animal crimes vary between countries, even between a country's states or regions. Treatment of these cases within the international courts informs the laws that address these issues (Arkow 2015).

Progress of veterinary forensic medicine in Chile

Several continuing education opportunities exist, including veterinary forensic conferences, postgraduate degrees, and training through professional associations, such as the British Veterinary Forensic and Law Association (BVFLA) and the International Veterinary Forensic Sciences Association (IVFSA). Both associations promote

forensic science and present scientific reports at annual meetings since before 2008. In 2014, this author and another colleague organized the first forensic veterinary medicine symposium in Chile at the Universidad de las Americas, Los Castaños campus, Viña de Mar. The symposium brought together veterinarians, veterinary students, veterinary technicians, police officers, attorneys, district attorneys, and medical examiners. In the future, the city of Viña de Mar will host the International Forensic Veterinary Medicine Conference for the second time, offering continuing education in forensic medicine, pathology, science, imaging, entomology, crime scene investigation, and clinical management, among other topics.

Besides the continuing education activities performed in Chile for investigators, Chilean society has become more aware of the increase of animal abuse cases, and that these horrendous animal crimes need to be handled by forensically trained professionals. It is necessary to recognize the aid of the press and social media in bringing awareness to animal abuse investigations throughout Chile, like those of the dog "Cholito," the kitten "Emma," and the elephant "Ramba." Numerous cases, such as those involving the massive poisoning of small animals, the illegal breeding industry, dogs hit on elevators, dogs enclosed in hot cars, and animals in illicit "sports," would have been overlooked had the media not alerted the public. Had an animal abuse video not gone viral, a particular crime may have stayed in silence and unprosecuted. If society had not protested against deficient legislation or an inadequate enforcement system, proposed legislation to strengthen animal abuse laws might still be collecting dust. In recent years, societal pressure has made this subject a central issue of concern.

Through workshops, lectures, conferences, and social media, this author expands awareness of veterinary forensic medicine by introducing this specialty to clinicians and owners and explaining how and when it should be included in an investigation. Furthermore, Chilean humane society organizations provide information to schools and the general public about what to do if an owner or other observer witnesses an animal cruelty crime.

Despite the progress made in veterinary forensic medicine and sciences in Chile, deficiencies still exist:

- people may be hesitant to report suspected crimes
- the number of qualified forensic veterinarians remains low and not every city has one
- too few police officers have experience investigating crimes involving animals
- many attorneys lack expertise in prosecuting animal crimes
- the legal protection of animals and sentencing laws for animal cruelty are inadequate.

In 2019 the Brigada Investigadora de Delitos Contra el Medioambiente y Patrimonio Cultural police department (BIDEMA), part of the Policia de Investigaciones de Chile (PDI, civil police), established that animal abuse cases increased 31% from 2017 to 2018 (PDI 2019).

It is important to report animal abuse, as there is a concerning and established link between interpersonal and animal violence. Several studies have shown that the violent interpersonal actions of adults, juveniles, or children often began with hurting animals (Sinclair et al. 2007). Since 2016, the United States Federal Bureau of Investigation started collecting information about different types of animal-related felonies in the National Incident-Based Reporting System (NIBRS). This database will be used in the development of animal abuse statistics (FBI, 2016). In Chile, no database exists to collect information on crimes against animals, the victim (species), the city, and the perpetrator's background. Such a database could be used to create national statistical information and connect animal crimes with other criminal activity.

Veterinary forensic medicine moving forward

The role of a veterinarian is more than just the treatment of injury or disease. Veterinarians are integral to the recognition, response, and prevention of animal abuse. They have the responsibility to protect human and animal life and relieve the torment of animals regardless of policies and legislation (Arkow 2015). Veterinary forensic investigations and the procurement of expert opinion are relevant to criminal legal cases. They may also be relevant to civil actions, malpractice hearings, insurance claims, industrial disputes, environmental impact assessments, and statutory inspection of pet shops, zoos, and other similar establishments. Veterinarians are increasingly seeking training in forensic necropsy and forensic clinical examination; even owners are requesting these services. These forensic sciences provide vital evidence that could mean the difference between a sentence or a dismissal. Analysis by veterinary professionals may help inform police during crime scene investigations.

BIDEMA, one of Chile's agencies that processes animal abuse reports, is the most suited police department in the country to work an animal crime scene because many of the officers are veterinarians and have participated in several professional and social seminars related to this subject. With a broad visionary scientific goal, it is time to expand BIDEMA to every Chilean city and work as a team with the Carabineros de Chile (Chile's public police department) to

establish a specialized department for crimes involving animals. Both PDI and Carabineros have prodigious crime scene laboratories (LACRIM and LABOCAR) that can inspect evidence from animals, living or deceased, and the crime scene.

This author is convinced that if forensic veterinarians and other professionals involved in animal crime investigations continue to share comprehensive information between clinicians, owners, politicians, police officers, attorneys, and judges, then advancement will continue in this veterinary forensic journey.

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