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Case report

Cat CAT-scan: Postmortem imaging and autopsy of two cats

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ABSTRACT

A man killed his wife and their shared household cats before killing himself. The combination of the killing (suicide or homicide) of a family member and the pet is seen on occasions in forensic pathology. The purpose of this case report is to provide a comparison of the killing methods of animals, ill pets and of household animals, also in extended suicides or homicides given the initially outlined case.

1. Introduction

On occasion, forensic pathologists deal with cases of human corpses where their similarly dead household pets are found dead next to them. Hasegawa et al. reported an assisted suicide of a woman and killing of the household dog by the husband with gunshots through the heads [1]. Cook described an extended suicide of a woman who killed herself and her pet dog by carbon monoxide poisoning [2]. Lew published a case where hanging was the method used for both spouses [3].

Crime scene investigation, postmortem imaging (computed tomography (CT), magnetic resonance (MRI)) and autopsy are important parts of forensic investigations into the manners and causes of death. The woman died from blows to her head with a metal bar, whereas findings of death scene and postmortem examination suggested that one cat likely died from direct blows to its head, whereas the second cat's head probably was smashed against hard structures when swinging the cat by its tail. The man attempted to kill himself using sharp force injuries to arms and to the chest and neck region. As that appeared to have failed to kill him, he placed a plastic bag over his head and asphyxiated.

The purpose of this case report is to demonstrate postmortem imaging and autopsy findings, and to interpret the findings within the range of killing methods of unwanted or ill animals as opposed to killing of pet animals in extended suicides or homicides.

2. Case description

A 40 year old woman and her husband were found dead on the bed in their bedroom. Their flat was located in a rural area. Investigation of the scene identified a suicide note in the kitchen. There were veterinary prescription drugs present, with empty containers out on the kitchen sink. This suggested that an attempt at overdosing could have been made. The premises were not locked, and so the case was approached as a possible double homicide.

The body, the face and the head of the woman as well as the mattress cover and the clothes contained relatively large areas with blood. The wall near the head showed blood patterns indicative of blows with a heavy object, matching her head injuries as a consequence of blunt trauma. The external inspection of the woman's body demonstrated multiple wounds of the head, neck and throat as a result of blunt force. A knife was found next to the woman, which also showed adherent blood. There, also a metal rod of a weight lifting machine was found. A plastic bag was pulled over the head of the man, who was also lying on the same bed, and was affixed around the neck by multiple turns of adhesive

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tape. On removal, its inside was dripping wet. The area of the neck and chest of the man showed multiple cut and stab wounds. His left forearm also presented multiple parallel cuts.

In the living room, an adult dead cat (cat 1, grey-white) was discovered on the sofa. Its ear canal contained blood. Next to it, there was a cardboard piece exhibiting scratch marks. Another adult dead cat (cat 2, brown-white) was found under the carpet on the floor of the bedroom without any evidence of external hemorrhage. In a utility room of the same flat, the edges of an unused metal dog cage and the nearby wall contained what appeared to be bits of cat hair and blood spatter suggestive of high velocity injuries to a cat.

The dog cage was present in the flat while the actual dog that explained the cage's presence – a German shepherd dog – was absent. That dog featured on a number of family pictures and appeared to have played a prominent role previously though. Its death had apparently preceded the current events even though further details could not be obtained. Furthermore, there were indications of the wife having an affair with another man.

A forensic autopsy of all bodies, including both cats, was ordered by the legal authorities to clarify manners and causes of deaths.

3. Postmortem imaging, forensic autopsy and findings

Prior to medicolegal dissection, postmortem multisclice computed tomography scans (PMCT) of both humans and cats were performed on a dual-source CT scanner (Flash Definition, Siemens, Forchheim, Germany). Scan parameters contained a tub voltage of 120 kVp, automatic dose modulation (CARE dose 4D, Siemens, Forchheim, Germany), slice thickness 1.0 mm and increments of 0.6 mm. Reconstructions were done using soft and hard reconstruction kernels.

Forensic autopsies of the human corpses were performed by a team of two forensic pathologists. Forensic autopsies of the cats were performed by a veterinary pathologist with experience in forensics and a team of two forensic pathologists. All examinations reported here were authorized by the judiciary investigation into this case.

3.1. Humans

Postmortem imaging of the woman showed burst fractures of the skull and pronounced gas embolism in the veins of the neck and right heart. In addition the neck showed fractures of the first

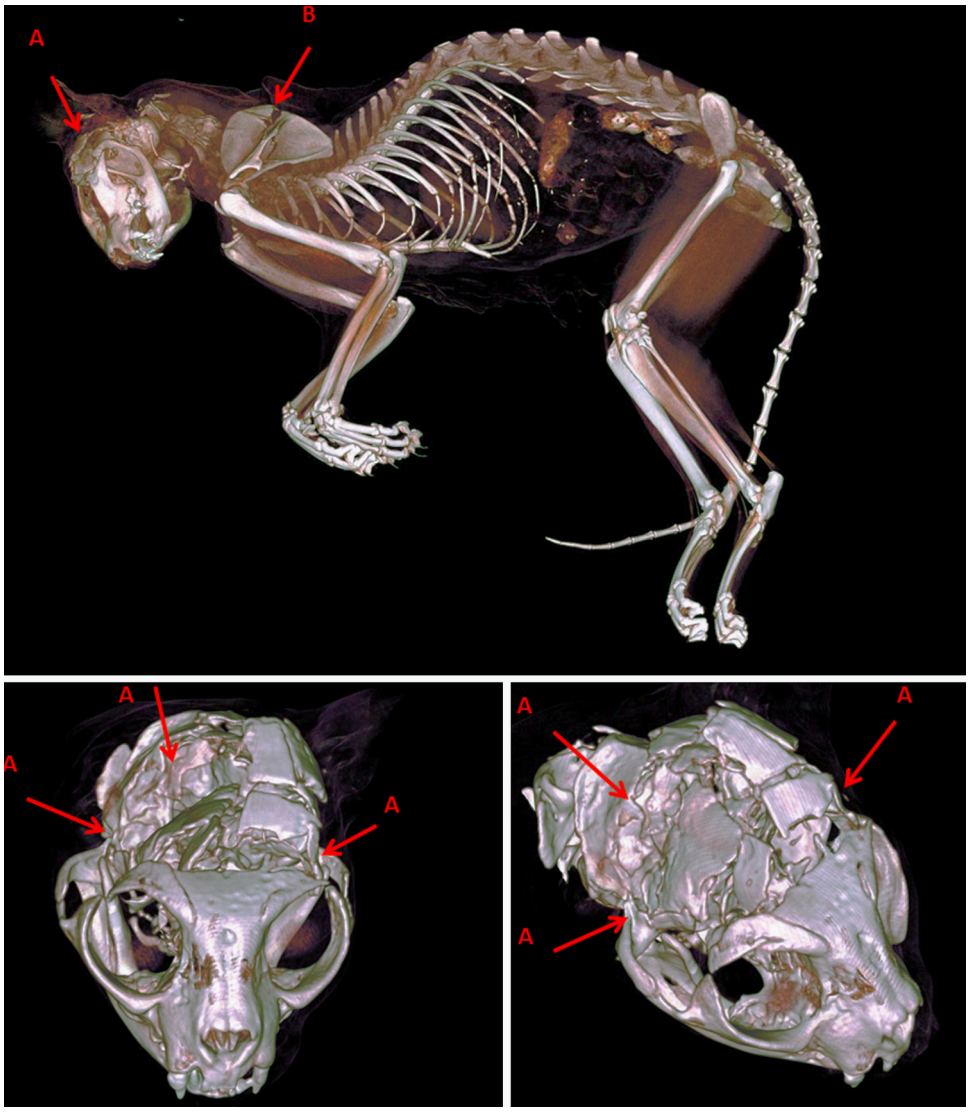

Fig. 1. Postmortem imaging of cat 1: some animals have musculoskeletal systems that sustain comparatively high forces and so macroscopically visible skeletal injuries may not occur. Then, postmortem imaging may add relevant reconstructive aspects to the examination. This figure shows the comminuted fracture of the skull (A) and fracture of the scapula (B) after blunt force with blows against the head and neck.