

Postmortem Scavenging of Human Remains by Domestic Cats

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ABSTRACT

Objective: Crime scene investigators, forensic medicine doctors and pathologists, and forensic anthropologists frequently encounter postmortem scavenging of human remains by household pets.

Case presentation: The authors present a case report of a partially skeletonized adult male found dead after more than three months in his apartment in Thailand. The body was in an advanced stage of decomposition with nearly complete skeletonization of the head, neck, hands, and feet. The presence of maggots and necrophagous (flesh eating) beetles on the body confirmed that insects had consumed much of the soft tissues. Examination of the hand and foot bones revealed canine tooth puncture marks. Evidence of chewing indicated that one or more of the decedent's three house cats had fed on the body after death. Recognizing and identifying carnivore and rodent activity on the soft flesh and bones of human remains is important in interpreting and reconstructing postmortem damage. Thorough analysis may help explain why skeletal elements are missing, damaged, or out of anatomical position.

Conclusion: This report presents a multi-disciplinary approach combining forensic anthropology and forensic medicine in examining and interpreting human remains.

Keywords: Postmortem scavenging; human remains; human skeleton; domestic cat (Siriraj Med J 2017;69: 384-387)

INTRODUCTION

While death marks the end for the decedent, it heralds the beginning of the cycle of arthropod activity, which is the main cause of postmortem deterioration.^{1,2} In some cases, animal scavenging may compliment, and even hasten, the destructive process of the maggots. Evidence of postmortem taphonomic effects by carnivorous or omnivorous species upon human remains is commonly encountered in forensic pathology, medicine, and anthropology. Most cases of postmortem scavenging occur outdoors, the consequence of wolves, coyotes, bears, and other large carnivores. This unrestricted scavenging has multiple possible effects: the dispersion of remains over a large area; missing bones; considerable damage to the body; and the ingestion of soft tissue and bones.³⁻⁶ Less common is the scavenging of human remains indoors. Indoor scavenging is usually the result

of domestic dogs or cats, rats, mice, and in one case a hamster.⁷⁻¹² Recognizing evidence of carnivore or rodent activity in human remains is important to medicolegal specialists. Such recognition may assist with interpreting trauma, including differentiating perimortem injuries from postmortem scavenging, loss of soft tissue and skeletal elements, and alteration of the crime or death scene.

CASE PRESENTATION

The decomposed remains of a middle-aged European male were found on the bed in the decedent's apartment. According to neighbors, the apartment had been locked and all of the exterior doors and windows were closed since the sole resident was last seen. The male was lying supine with his upper body slightly elevated on a pillow. The decedent's right arm was in pronation, raised and

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Received 25 May 2017 Revised 4 September 2017 Accepted 5 September 2017

doi:10.14456/smj.2017.71

arched (abducted) across a pillow. The left arm was in supination on the mattress, abducted about 60 degrees. His left leg was extended, and his right leg was flexed toward the ceiling. The body was in an advanced stage of decomposition with varying degrees of skeletonization of the head, neck, and the upper and lower limbs. Much of the soft tissue and organs of the abdomen were missing, presumably the result of insect activity by maggots (the larvae of blow flies, *Diptera*) and flesh-eating beetles (*Dermestidae*). The thorax was decomposed and there was a considerable amount of soft tissue covering the ribs with skeletonization of the sternum and portions of some anterior ribs. The hands were fully disarticulated from the radius and ulna and found scattered on the floor around the bed. The legs were skeletonized from the knee down. The foot phalanges were also found disarticulated and scattered on the floor around the bed. The dispersion of hand and foot bones suggested they were scattered postmortem by the decedent's house cats (*Felis catus*) and not the result of natural skeletonization and disarticulation (Fig 1). No evidence of trauma or foul play was noted at the scene or during autopsy. A comparison of antemortem dental records with a thorough postmortem dental examination positively identified the decedent.



Fig 1. Hand and foot bones (yellow) scattered on the floor around the decedent's bed by his cats. The brownish-gray dust-like substance on the floor is frass (feces) from the dermestid beetles that fed on the decedent.

Forensic anthropological analysis of the skeletonized remains concomitant with the examination for perimortem trauma revealed robust male features in the crania, pelvis, and long bones. These features consisted of a sloping frontal bone, developed nuchal crests, large mastoid processes, blunt orbital rims, and a developed brow ridge and glabella.^{13,14,15} The anthroposcopic (visual) traits of the pelvis supported the attribution of sex as male. The

triangular pubic bones, absence of a ventral arc and subpubic concavity, and a deep and narrow greater sciatic notch were consistent with a male pelvis. Maximum diameter of the left femoral head measured 48 mm, well within the range for adult males. Estimation of Caucasoid ancestry/race was based on examination of the crania with high and rounded cranial contour, prominent nasal bones, narrow nasal aperture, and prominent anterior nasal spine. The nasal bones revealed healed fractures that likely occurred years before the man's death.

Evidence of scavenging activity was especially noticeable in several hand and foot phalanges that exhibited paired canine (cuspid) puncture marks. Further evidence was found in broken bones and in areas of missing bones, both bordered by jagged edges. The presence of canine tooth puncture marks and missing bone (Figs 2 and 3), and scattered manual and pedal phalanges around the body were consistent with postmortem carnivore activity by one or more of the house cats. No evidence of scavenging was noted in the crania, even of the fragile and thin nasal bones, or in the rest of the skeleton. No evidence of rodent scavenging was observed.



Fig 2. Hand and foot bones recovered from the floor around the decedent's bed, some of which exhibit evidence (circles) of chewing by cats.



Fig 3. Hand bones, some with canine/cuspid puncture marks (circles) and some without evidence of chewing by one or more of the decedent's cats.

DISCUSSION

A review of the literature revealed numerous reports of outdoor scavenging of human remains by large carnivores such as wolves, coyotes, and rarely even bears.^{3,4,5,6} There are, in contrast, few reports of indoor scavenging by domestic dogs, rats and mice, and even fewer reports involving domestic cats.^{7,8,9,10} Evidence of carnivore and rodent scavenging differ in several ways. For example, carnivores with their strong chewing and biting muscles, and large canine teeth, often produce deep, cone-shaped puncture injuries in soft tissue and bone. They fracture and splinter long bone diaphyses, and gouge and score smooth bone such as in the crania and long bones. Carnivores will scavenge almost any bone. At their very core, cats are carnivorous. None of a cat's dentition, including their molars, is designed for grinding. They are ideal for slashing, puncturing, and holding their prey.

Unlike carnivores, rodents and small mammals typically focus on smaller bones such as the fingers and toes, as well as ridges, bony projections, and any portion of bone that they can gnaw on with their incisor teeth. Thus by comparison, typical evidence of rodent activity in bones consists of gnawed areas characterized by deep, parallel grooves and gouges from the incisor teeth. The motivations for scavenging vary. Many researchers attribute postmortem scavenging of human remains to hunger.^{9,16} In cases when hunger was not a factor and other food sources were readily available, scavenging still occurred.^{7,10} Other researchers suggest that scavenging may begin as an attempt to revive an unconscious owner. When licking or nudging is unproductive, the animal may escalate attempts to revive the decedent by nipping and biting.¹⁰ Whatever the motivation, forensic evidence provides confirmation of what pet owners typically deny.

Postmortem scavenging may increase the difficulty of identifying the decedent. Collection and close examination of scavenged bones may also help differentiate perimortem injuries from postmortem scavenging. The ability to recognize postmortem scavenging may also help investigators understand and explain the loss of soft tissue, as well as the separation and dispersion of skeletal elements. Evidence of carnivore and rodent activity on soft tissues of the body may consist of canine tooth puncture marks and irregular edges, or scalloping, of the skin. Chewing, or gnawing, may be especially noticeable in the softer epiphyses of bones.

Carnivores and rodents often consume portions of the skeleton leaving visible evidence in the form of canine tooth puncture marks, jagged bone ends, and deep, parallel striations and gouges around areas of missing

bone. Recognizing postmortem scavenging of the human body may play a critical role in the interpretation of a crime or death scene. Scavenging activity may result in the alteration or even complete obliteration of perimortem injuries. However, canine puncture marks with their circular or oval shaped outlines can usually be distinguished from perimortem injuries from a knife or other stabbing object that leaves an incised wound.

Carnivores and rodents often leave evidence of gnawing along raised areas of bone such as the zygomatic arches, orbital rims, nasal region, among others. Large carnivores may consume all but the thickest and sturdiest portions (diaphysis/shaft) of long bones and marrow, especially favoring the softer ends (epiphyses) of the long bones, hips, ribs, fingers, and toes. Powerful carnivores may even use their large canine teeth and powerful jaws to split the long bones of the arms and legs into long slivers and wedges of bones.⁷ Consumed bones, hair, soft tissues, and even jewelry have been recovered in pet feces (scat) either by immersion in water or using X-rays.⁸

Scavenging of human remains in an indoor environment such as a house or apartment, especially over a period of weeks or months, sometimes occurs when a pet exhausts its supply of food and begins to consume the decedent. However, hunger may not always be the cause of animals consuming human remains. One such case involved the partial consumption of a suicide victim by his pet Alsatian dog in less than an hour.¹⁰ Not only did the dog consume most of the decedent's face and neck, but much of the blood and soft tissue on and around the body from a gunshot wound to the mouth. The animal vomited a large quantity of canned food and human soft tissue, skin and beard from the victim while being transported to an animal shelter. Further evidence that consumption of the decedent was not due to hunger was a large bowl of dog food in the bedroom where the decedent and Alsatian dog were found.

This case is unusual because it serves as an example of the postmortem scattering of human hand and foot bones by cats. Two of the cats were found dead and the third cat was near death. The cats were not examined for evidence of consuming human remains.

CONCLUSION

This case documents a rather singular situation of postmortem scavenging of human remains by domestic cats. A close examination of postmortem bone modification may provide additional information on circumstances surrounding a death. Taphonomic damages to bones in the form of disarticulation, breakage, or disappearance due to

carnivorous scavenging may mimic, or be mistaken for, blunt force trauma. However, an accurate interpretation of pits and punctures, grooves and gnaws, scats and scores, and bites and breaks may explain not only how they occurred, but when and by whom. Analysis of postmortem scavenging may ultimately assist in refining the postmortem interval. The effects of postmortem scavenging of human remains by domestic cats warrant additional attention to further appreciate and refine the sometimes silent and often subtle, feline messages made available to forensic specialists.

ACKNOWLEDGMENTS

We thank the staff and Department of Forensic Medicine, Faculty of Medicine Siriraj Hospital, Bangkok, Thailand for their assistance and expertise.

REFERENCES

- Haskell NH, Hall RD, Cervenka VJ, Clark MA. On the body: Insects' life stage presence and their postmortem artifacts. In: Haglund WD, Sorg MH, eds. *Forensic Taphonomy*. New York: CRC Press, Florida, 1997.p.415-48.
- Mann RW, Bass WM, Meadows L. Time since death and decomposition of the human body: Variables and observation in case and experimental field studies. *J Forensic Sci*. 1990 Jan;35(1):103-11.
- Haglund WD. Dogs and coyotes: Postmortem involvement with human remains. In: Haglund WD, Sorg MH, eds. *Forensic Taphonomy*. New York: CRC Press, 1997.
- Haglund WD, Reay D, Swindler D. Tooth mark artifacts and survival of bones in animal scavenged human skeletons. *J Forensic Sci*. 1988;33:985-997.
- Haglund WD, Reay D, Swindler D. Canid scavenging/disarticulation sequence of human remains in the Pacific Northwest. *J Forensic Sci*. 1989;34:587-606.
- Willey P, Snyder L. Canid modification of human remains: implications for time-since-death estimations. *J Forensic Sci*. 1989;34:894-901.
- Steadman DW, Worne H. Canine scavenging of human remains in an indoor setting. *Forensic Sci Int*. 2007;173:78-82.
- Bass W. Will the forensic anthropologist please help: a case of a woman eaten by dogs. In: Presented at the 39th Annual Meeting of the American Academy of Forensic Sciences, Anaheim, CA 21-25 February 1984, 1984.
- Rossi M, Shahrom A, Chapman R, Vanezis P. Postmortem injuries by indoor pets. *Am J. Forensic Med Pathol*. 1994;15: 105-109.
- Rothschild M, Schneider V. On the temporal onset of postmortem animal scavenging "motivation" of the animal. *Forensic Sci Int*. 1997;89:57-64.
- Ropohl D, Scheithauer R, Pollak S. Postmortem injuries inflicted by domestic golden hamster: morphological aspects and evidence by DNA typing. *Forensic Sci Int*. 1995;72:81-90.
- Tsokos M, Schultz F. Indoor postmortem animal interference by carnivores and rodents: report of two cases and review of the literature. *Int J Legal Med*. 1999;112:115-119.
- Bass WM. *Human Osteology. A Laboratory and Field Manual*. 4th ed. Columbia, MO: Missouri Archaeological Society, 1995.
- White TD, Folkens PA. *Human Osteology*. 2nd ed. London, UK: Academic Press, 2000.
- Byers SN. *Introduction to Forensic Anthropology*. 4th ed. Upper Saddle River, NJ: Prentice Hall, 2011.
- Mant K. Postmortem injuries inflicted by animals. In: Tedeschi C, Eckert W, eds. *Forensic Medicine: A Study in Trauma and Environmental Hazards*. Philadelphia: Saunders, 1977.p.1076-69.