



## Pathology Biology Section - 2012

### G74 Decapitation: Unusual Feature of a Fatal Dog Attack

*Benedetta Di Battista, MD\*, and Irene Riezzo, PhD, University of Foggia, Department of Forensic Pathology, Osp D'Avanzo, Viale degli Aviatori, 1, Foggia, 71100, ITALY; Valerio Jarussi, VMD, Via G. Imperiale 13/G., FOGGIA, 71100, ITALY; Fabrizio Iarussi, DVM, Department of Public Health and Animal Husbandry, University of Bari, Bari, ITALY; Eugenia Carnevali, BS, Hospital of Terni, via T. di Joannuccio, snc, Terni, 05100, ITALY; Massimo Lancia, MD, Institute of Forensic Medicine, University of Perugia, Perugia, ITALY; Giulio Zizzo, MD, Department of Radiology, Ospedali Riuniti, Viale Pinto 1, FOGGIA, 71100, ITALY; and Margherita Neri, MD, PhD, University of Foggia, Department Forensic Pathology, Viale degli Aviatori 1, Foggia, 71100, ITALY*

After attending this presentation, attendees will understand the concerns in a case of a fatal Rottweiler dog attack on a 52-year-old man who was found dead on a farm where he worked.

This presentation will impact the forensic science community by showing how the evaluation of fatal dog attacks requires an integrated approach in association with veterinary pathologists and forensic geneticists, involving review of the circumstance of death, examination of the death scene, CT analysis and autopsy examination of the victim and the histological and immunohistochemical examination (IL-15, CD15 and tryptase).

The cases were all characterized by extensive and mutilative stripping of soft tissues from the upper limbs, face, and scalp, progressing to decapitation in the man. Investigators found the entire skull, completely skeletonized, of about 800 meters away from the decapitated body. A complete methodological forensic approach by means of autopsy, histological and immunohistochemical examinations and an integrated study in association with a veterinary doctor and forensic genetics is an important part of such investigations. It may provide information helping to establish the identity and ownership of the animal, along with trace evidence confirming that the dog was involved in the attack with comparison of the bitemarks on the victim and the dentition of suspected dog.

Deaths due to animal attacks are rare. Deaths caused by dog attacks appear to be growing as the population of both humans and dogs has increased. Many types of dogs have been involved in fatal attacks on humans, with at least 25 different breeds reported in 238 deaths in the United States over a 20-year period. The majority of cases (60%) have, however, involved pit bull-type dog, rottweiler, and german shepherds, most of whom were unrestrained on their owner's property. Diagnosis of a wound as a bitemark is generally not difficult considering the rather pathognomonic wound pattern of "a hole-and-a-tear" together with skin abrasions and claw marks. Any part of the body can be the site of a dog attack. An unusual concentration of severe injuries to the head and neck regions is typically reported in the literature. Bites to the forearms are also common as the limbs are generally raised in an attempt to protect the face. Dog attack deaths usually result from exsanguinations through opened body cavities and/or large vessels and/or asphyxia.

**Case:** A 52-year-old Caucasian man was found dead on the sidewalk in front of his home on the farm where he worked. A multidisciplinary forensic approach, including CT analysis, autopsy findings, histological and immunohistochemical examination, and bitemark analysis was performed. A complete autopsy was performed 48-hours after death. The external examination revealed the presence of multiple and coarse lacerations of the skin in the upper limbs and clusters of superficial, linear, parallel abrasion from a dog's claws were present in the skin adjacent to bitemarks. In the thorax, cluster of ribbon and parallel abrasions with the same trend were observed bilaterally. The most striking finding was represented by decapitation, characterized by a laceration of the circumference of neck exposed second thoracic vertebra, the trachea completely dissected, the vessels of the neck and the paravertebral muscles and shoulders, strong friction and hemorrhagic. The CT analysis of the skull demonstrated small scratches at the neurocranium made by the canine teeth and/or paws. There were no other injuries on the body. The internal examination revealed a hemorrhagic area around the neck vessels that appeared frayed. Histological study of tissue samples confirmed the vitality of the skin lesions. The immunohistochemical examination of the bitemark specimens revealed a positive reaction for antibodies anti CD15, IL-15 and tryptase. The death was attributed to decapitation and hemorrhage due to vascular disruption.

An integrated study with a veterinary doctor was performed by creating the dog's dental cast. Dental casts were superimposed on the victim's wound samples collected at autopsy and analyzed for compatibility with the patterns taken from the jaws of suspected dogs could be clearly adapted on the bitemarks. The results of this investigation allowed the confirmation that the bitemarks found on the corpse matched the cast of the dental arches of the suspected rottweiler. The genetic laboratory was able to match the human DNA profile from the samples (blood and fecal impaction containing hair of the man) the suspected dog. The human DNA profile found was identical to that of the victim. Genetic typing was performed with 19 canine microsatellites markers, co-amplified in a single multiplex PCR reaction with "Canine Genotypes Panel 1.1 (Finzymes Diagnostics, Finland). The search for genetic traces of the dog was performed on samples of skin and muscle of the victim.

#### **Dog Attack, Decapitation, Bitemarks**