

Discussion: Although crime scene investigation was not enough to estimate if the animals were killed in the location or if they conscientiously dragged themselves until there, the suspicion was that the animals died in those areas, and not randomly discarded, by presenting blood traces all around the place (Figures 1.A and B). Considering the lesions pattern, a possible dog attack could be the deaths cause, and maybe by a same dog, because as seen in Figures 2.C and D, the lacerations and hemorrhages presented a symmetrical curvature compatible to a medium size canine mouth, with the same size in different animals, as pointed out before. Moreover, the cyclicity of cases, led us to believe that these deaths could also be induced by a human guardian, since a possible aggressive errant dog would not choose a unique and same day of the week to hunt. Especially considering that the Campus remained closed during weekends, with the entrance of restricted to security personnel, suggesting their possible involvement because the time of death was about 8 to 12 hours before, that is on the same day early, or on the day before (Sunday). **Conclusion:** Necroscopic examination, along with complementary investigations, was determinant to produce important evidences that someone intentionally led a dog, for several times, to attack the feline population within the Campus, even knowing its massive consequences. Moreover, according to the current legislation in Brazil (Article 936 of the Civil Code – Law 10406/02), the owner is the person in charge to respond for any accidents caused by the animal, except in particular situations. Thus, it would be equally expected for the responsible to be “hunted” and correctly punished.

References

ARMED FORCES INSTITUTE OF PATHOLOGY. **Technical Bulletin Med. nº 283:** veterinary necropsy protocol for military working dogs and pathology specimen submission guidelines. Washington, D.C.: Department of the Army, 2001.

BROOKS, J. W. Postmortem changes in animal carcasses and estimation of the postmortem interval. **Veterinary Pathology**, Thousand Oaks, v. 53, n. 5, p. 929-940, 2016.

CUEVAS, S. E. C. *et al.* Papel da patologia forense veterinária na investigação de óbito sob circunstâncias desconhecidas de um cão. **Revista de Educação Continuada em Medicina Veterinária e Zootecnia do CRMV-SP**, São Paulo, v. 14, n. 1, p. 49, 2016.

FRANÇA, G. V. **Medicina legal**. 10. ed. São Paulo: Guanabara Koogan, 2015.

PEIXOTO, P. V.; BARROS, C. S. L. A importância da necropsia em medicina veterinária. **Pesquisa Veterinária Brasileira**, Rio de Janeiro, v. 18, n. 3-4, p. 132-134, 1998.

TOUROO, R.; FITCH, A. Identification, collection, and preservation of veterinary forensic evidence: on scene and during the postmortem examination. **Veterinary Pathology**, Thousand Oaks, v. 53, n. 5, p. 880-887, 2016.

A DOG DEATH IN A HIT AND RUN ACCIDENT

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Introduction: The practice of veterinary forensic pathology is often precisely to give a voice to a voiceless animal victim of abuse or neglect and tell a well-documented story about an animal that has suffered or died (LOCKWOOD, 2016). In human legal medicine, a lot of hit and run cases are the reason for corpse evaluation. The investigation of hit-and-run road accidents is a special challenge to forensic medical examiners requiring a multiskilled approach (FRANÇA, 2015). In the medical literature, the principles of patient evaluation were demonstrated primarily on the basis of hit-and-run fatalities, but they also apply to clinical forensic medicine (DODD, 2000). In forensic necropsies, a multiskilled approach is also needed. It is fundamental to exam carefully all the external and internal bruises, fractures and other signs of trauma and try to link the shapes and severity of damage caused with a hypothesis about the source of the impact suffered by the body (BROWNLIE, 2016). The present paper is a case report of death caused by trauma in consequence of a hit and run, an animal related crime unfortunately not uncommon in veterinary forensic necropsy investigations. **Case Description:** An young male adult, Yorkshire Terrier dog, was analyzed and verified accord to forensic traumatology after the request of a necropsy exam by the witness who found it on the street. The necropsy

procedure was performed by the service of Pathology and Legal Medicine of Laboratório de Anatomia Patológica e Patologia Clínica LTDA (Pathovet), using a modified necropsy technique from the Armed Forces Institute of Pathology (AfiP). All complementary analysis was performed in the same laboratory. In this case, a Yorkshire terrier was seen running on the street and a few moments later was found dead. On the external body examination, it was visualized parallel linear brown marks measuring around 3.5cm in length on the medial abdomen, macroscopically compatible with the shape of tires burns, which matches the history context. There was also a contusion bruise on the left thoracic limb and a greater bruise on the right thorax area transitioning to right abdomen area that was correspondent with a massive liver laceration, with extensive parenchymal hemorrhage and hepatocytes necrosis and hydropic degeneration found on the histological analysis. In addition to that, there was more than 50ml of red fluid in the thoracic cavity and another 30mL with a great amount of blood clots in the abdominal cavity characterizing a hemothorax and hemoperitoneum. The causes mortis was attributed to hypovolemic shock due to hemothorax and hemoperitoneum.

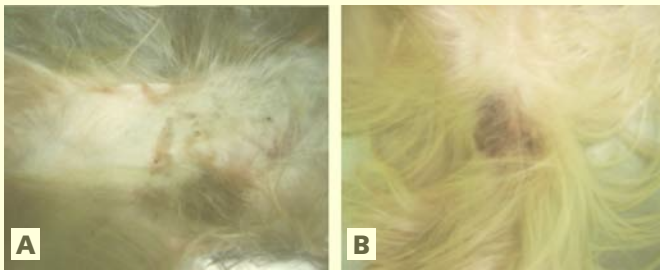


Figure 1 - (A) Tire burns marks on abdominal skin. (B) Contusion bruise on thoracic limb.

Source: Laboratório Pathovet.

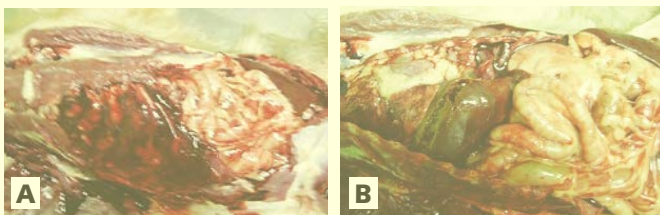


Figure 2 - (A) Bruise on right lateral ribs, corresponding location with liver laceration (B).

Source: Laboratório Pathovet.

Discussion: In consideration to lesions pattern found on the dog's body, the external factor that caused all the injuries in the first place was the impact suffered by a great mass, as an automobile for example, which stands by the main hypothesis of the source of the impact, because the dog was seen earlier before running on a street with a great flux of automobiles moments before it was found dead. Hemoperitoneum is a finding generally caused by penetrating abdominal injuries resulting from bite wounds, gunshot, knife, other missile wounds and impalements (KIRBY, 2012). Occasionally a blunt abdominal trauma such as automobile injuries, like in this case, can also result in a hemoperitoneum. Blunt trauma to the liver, spleen, kidneys, and major vessels can cause patients hemorrhagies (MONGIL, 1995). The liver and spleen are thought to be the most likely sources of severe hemorrhage (FOSSUM, 1997). Because of its large size, friability, and relative immobility, the liver has been reported to be the most commonly injured intra-abdominal organ, and one of the most challenging to manage therapeutically if injured. The liver laceration could easily be the source of the blood that was found in the abdomen cavity (CROWE, 1988). Damage in parenchymal organ such as liver and spleen are very difficult to manage therapeutically, being required a fast surgical intervention in order to have any chance of success in the procedure, which points out that the immediate treatment could have saved this animal life (KIRBY, 2012). Generally, authors agree that the blood loss limit compatible with life in dogs is around 30% of its total volume (AUTHEMENT, 1987). This dog total weight was around 4.0kg, in which the loss of approximately 80mL volume of plasma/blood could easily make it hemodynamically unstable and initiate a hypovolemic shock as seen in this case related to the traumatic hit. The driver didn't stop the car to help the animal or even to take any responsibility for the accident which is directly linked to the animal's death. This makes this supposed accident an animal related crime, and for this the driver can legally respond. There was a lot of vehicles passing through the crime scene at the time, and the other persons did not payed any attention to the car's identification. **Conclusion:** In human legal medicine, hit and run comprises a great amount of trauma cases, as well as in veterinary legal medicine and the law enforcement requires a well-written necropsy report, that can be used in court as a scientific evidence that

should help clarify medical doubts about the biological process suffered by the animal involved, and link the type of the lesions found to the source of the impact.

References

ARMED FORCES INSTITUTE OF PATHOLOGY. **Technical Bulletin Med. nº 283**: veterinary necropsy protocol for military working dogs and pathology specimen submission guidelines. Washington, D.C.: Department of the Army, 2001.

AUTHEMENT, J. M.; WOLFSHEIMER, K. J.; CATCHINGS, S. Canine blood component therapy: product preparation, storage and administration. **Journal of American Animal Hospital Association**, Lakewood, v. 23. p. 483-493, 1987.

BROWNLIE, H. W. B.; MUNRO, R. The Veterinary forensic necropsy: a review of procedures and protocols. **Veterinary Pathology**, Thousand Oaks, v. 53, n. 5, p. 919-928, 2016.

CROWE, D. T. The steps to arresting abdominal hemorrhage. **Veterinary Medicine**, Duluth, v. 83, p. 676-681, 1988.

DODD, M. J. Traffic deaths. In: SIEGEL, J. A., SAUKKO, P. J., KNUPFER, G. C. (Ed.). **Encyclopedia of forensic sciences**. London: Academic Press, 2000. v. 1, p. 353-358.

FOSSUM, T. W. Surgery of the abdominal cavity. In: _____. **Small animal surgery**. St. Louis: Mosby, 1997. p. 179-199.

FRANÇA, G. V. **Medicina legal**. 10. ed. São Paulo: Guanabara Koogan, 2015.

KIRBY, B. M. Peritoneum and retroperitoneum. In: JOHNSTON, S. A.; TOBIAS, K. M. (Ed.). **Veterinary surgery: small animal**. St. Louis: Elsevier Saunders, 2012. v. 1, p. 1418-1421.

LOCKWOOD, R.; ARKOW, P. Animal abuse and interpersonal violence: the cruelty connection and its implications for veterinary pathology. **Veterinary Pathology**, Thousand Oaks, v. 53, n. 5, p. 910-918, 2016.

MONGIL, C. M.; DROBATZ, K. J.; HENDRICKS, J. C. Traumatic hemoperitoneum in 28 cases: a retrospective review. **Journal of the American Animal Hospital Association**, Lakewood, v. 31, n. 3, p. 217-222, 1995.

IATROGENIC PNEUMOTHORAX IN DOG AFTER ATTEMPT TO CARDIOPULMONARY RESUSCITATION (CPR)

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Introduction: Pneumothorax is the presence of air in the pleural cavity resulting from a discontinuity of the pleural membrane, which allows air to enter the thoracic environment, turning positive the pressure that was negative (ARRUDA, 2011). This condition can surge by spontaneous, traumatic or iatrogenic way. It can be classified as open or closed pneumothorax. The former is produced by a penetrating trauma generating a communication between the thoracic cavity and outer environment turning possible the progressive air penetration. The latter is caused by a blunt trauma and the air accumulation occurs due to extravasation from the injured lung parenchyma, bronchial tree, trachea or esophagus. The consequence of the intrathoracic positive pressure involves: decreased venous return, decreased cardiac output and progressive respiratory insufficiency, possibly resulting in rapidly patient's death. This paper is a report of an iatrogenic pneumothorax case confirmed by a necropsy exam (ANDRADE FILHO; CAMPOS; HADDAD, 2006). **Methods:** A two years old Labrador dog was taken to emergency veterinary care for abdominal dilation and syncope. As an attempt to keep the patient alive, CPR was performed and during this process the animal died due to cardio-respiratory arrest. The necropsy procedures were performed by the Laboratório de Anatomia Patológica e Patologia Clínica (Pathovet), in Fortaleza, Ceará, using the modified technique of a veterinary necropsy protocol from the Armed Forces Institute of Pathology – Afip (ARMED FORCES INSTITUTE OF PATHOLOGY, 2001). **Results:** During necroscopic examination it was found a caudally dislocated diaphragmatic dome with an insufflating appearance (Figure 1), caused by the CPR procedure, leading to edema, acute pulmonary hemorrhage (Figure 2), pneumothorax and death. Although the cause of death was clear,