doi: 10.17221/8389-VETMED

A car accident involving a restrained dog within the vehicle: a case report

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ABSTRACT: The aim of this article is to describe and evaluate a unique car accident involving a pet dog within a car. The unique aspect is the linking and evaluation of information from the veterinary record with a detailed description of the car accident, the driver's injuries, the safety systems used and photographs. This method of complex evaluation of an injury mechanism is commonly used in forensic medicine when evaluating car accidents involving people. The accident is especially unique due to the fact that a dog safety harness was used to restrain the pet dog. The dog suffered severe injuries, whilst the car driver suffered only minor injuries. The conclusion was that the dog safety harness did not work correctly and did not protect the dog.

Keywords: safety harness; transportation; trauma; dog

Travelling with a dog in a vehicle is a common activity for dog owners, sometimes even daily for dogs that accompany their owners during working hours. Many dog owners take their pet dogs with them on trips or even on vacation. Most dog owners at least use a car when bringing their dog on occasional trips to the veterinarian. Drivers in the Czech Republic are obligated to restrain pets in a vehicle by the Road Traffic Law, but the law does not specify how and where to restrain a dog.

The purpose of restraining a dog in a vehicle can be understood from the road traffic safety and passenger safety points of view. Adequately restrained pet dogs should not have the ability to move freely within the car, especially in the case of collisions or harsh braking. Securing a dog reduces the risk of car accidents caused by a driver distracted by a dog, as well as reducing the risk of passenger injuries caused by a dog moving within the car as an 'unanchored object'. There are many products available on the market which serve this purpose.

From a dog safety point of view, the situation is much more complicated. There are no standard test protocols or any other monitoring standards which the dog safety products suitable for cars have to meet, as is the case with child safety seats. For a dog owner it is, therefore, understandably difficult to decide on whether the method chosen to restrain the dog or a particular product will prove effective in protecting both the pet dog and the passengers in the case of a car accident.

The aim of this article is to describe and evaluate a car accident involving a dog restrained within the vehicle and to highlight the issue of dog safety harnesses for veterinarians from the perspective of forensic medical doctors.

Case description

In cooperation with the Small Animal clinic, University of Veterinary and Pharmaceutical Sciences, Brno, the Czech Republic, the authors found the case of an unique car accident involving a pet dog within a car, and will describe this in detail (with the permission and help of the car driver). This case is not unique because of the low numbers of such accidents however, even though the veterinarians, with whom we worked, do not deal with such accidents frequently. The unique aspect of it is rather the linking and evaluation of information from the veterinary record with a de-

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Figure 1. The vehicle after the accident

tailed description of the car accident, the driver's injuries, the safety systems used and photographs. This method of a complex evaluation of the injury mechanism is commonly used in forensic medicine when evaluating car accidents involving people. The accident is especially unique due to the fact that a dog safety harness was used to restrain a dog. The pet suffered severe injuries, whilst the car driver suffered only minor injuries.

At the beginning of 2014, there was a car accident involving a young woman in the Czech Republic. The woman skidded in a curve on a snowy road at approximately 60 kph and hit a tree by the front passenger door. There was only her and her dog in the car. The driver was fastened by a seat belt, airbags were not activated, but the vehicle was damaged beyond repair (Figure 1).

The driver was admitted to a hospital with brain concussion and a laceration wound on the right side of her head, which was treated by three surgical stitches. After three days in the hospital, she wished to be discharged to see her dog, which was severely injured during the accident and euthanasia was indicated.

This dog, a seven-month-old female Border Collie, was also in the interior of the vehicle. It is a medium dog breed, with a weight of 14 kilograms. She was placed on a rear seat behind the driver and was restrained by a dog safety harness in a size recommended for a Border Collie. The integrity of the harness was not broken.

After the accident, the dog was treated in a Veterinary Emergency with lower limb paralysis; she did not urinate after the accident. There was a compressive fracture of the body of the 12th thoracic vertebra with spinal cord injury diagnosed from an X-ray examination (Figure 2). A pain medication was prescribed and euthanasia was suggested. The family decided to take the dog back home for a few days to allow the injured driver to say goodbye.

DISCUSSION AND CONCLUSIONS

Upon the lateral collision, the driver's body moved towards the front passenger seat, but its movement was restricted by the seat belt. As a result, the injuries observed were not as extensive as in other types of collisions since the body had enough space to move (Hirt et al. 1998). The driver's wounds reflected the injury mechanism; they were minor and most likely caused by her head striking against the steering wheel (or another object within the car).

The Border Collie in the back seat was restrained by a dog safety harness with the tether connected to the seatbelt buckle. The driver was not injured by the dog as an 'unanchored object' within the car since the dog was restrained and the collision was not grave. The dog's body moved in the same manner as the driver's, which means towards the right rear seat. Considering the length of the tether, the possibility of the dog crashing into a structure within the car (rear or side surfaces of the front seats, the right rear passenger door) cannot be excluded. There were no other objects on the rear seat which could have injured the dog.

A compressive fracture of the body of the thoracic vertebra can be caused by two basic mechanisms. The first mechanism is a flexion and compression of the vertebral column along its longitudinal axis. This could be caused by the dog colliding with the interior structure of the car (Figure 3). In such a case, some external injury would be expected, mainly in the head area. No such injury was described in the veterinary record nor was visible in the pictures of the dog after the accident. However, this might not have been easily found considering the dog's thick hair, therefore, this injury mechanism cannot be excluded.

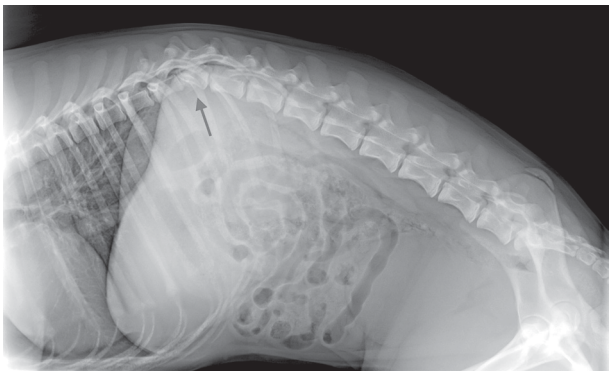

Figure 2. Lateral X-ray of the dog, compressive fracture of 12th thoracic vertebra is indicated by the arrow

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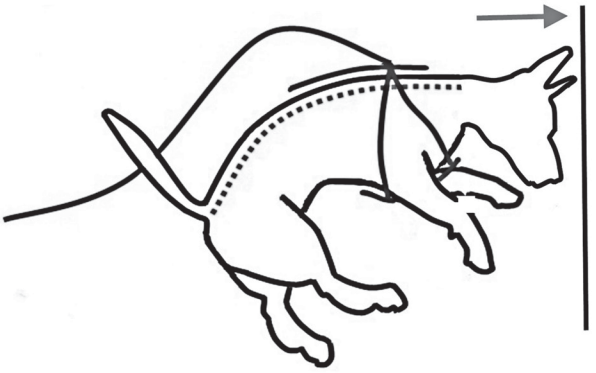

Figure 3. Dog colliding into the interior structure within the vehicle results in flexion and compression of the vertebral column along its longitudinal axis (by K. Grusova, J. Taus)

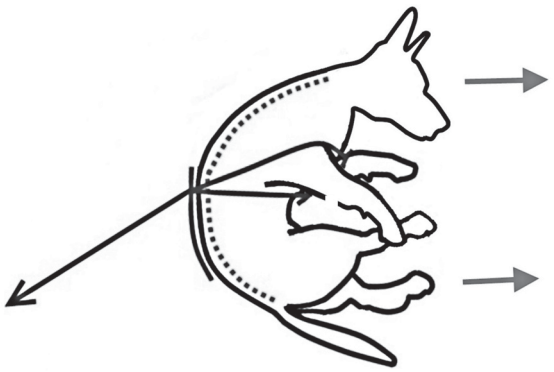

Figure 4. Rapid and intense traction on the back side of the harness at one spot resulting in the rapid and extreme flexion of the vertebral column (by K. Grusova, J. Taus)

The injury could have also been caused by the safety harness itself. The dog was fastened by the harness across its chest. This harness was similar to regular walking harnesses, but had wider and thicker front and rear straps. The belt was attached by a snap-hook to a single spot on the back of the harness, so that upon a collision the movement of the dog's body would be restricted by the belt's snap-hook. However, the head and lower part of the dog's body continued moving forward causing a rapid and extreme flexion of the vertebral column (Figure 4).

In conclusion, the dog safety harness did not work correctly and, thus, did not protect the dog. An autopsy would be required for a more accurate description of the injury mechanism, but in this case the procedure could not have been performed. It is solely the dog owner's decision whether they wish to take the dog's body home after euthanasia; hence, an autopsy cannot be demanded.

Dog safety harnesses are widely used and have numerous advantages. They are easy to use, available in any pet store for a good price and can also be used as walking harnesses. They are more convenient to store than carriers and can also be utilised for large dog breeds that do not fit in a regular carrier or cage. Their main disadvantage is that no compulsory standard test protocol currently exists to verify their efficiency in case of an accident. Several studies examined dog safety harnesses, but the results were not satisfactory (ADAC 2008, CPS 2013, NRMA 2013). On 15 July 2014, the first Safety harness crash test protocol and Rating system was released by the Center for Pet Safety in the United States of America (CPS 2014). Pet product manufacturers are offered this voluntary certification program to qualify for a Safety-Certified Seal on their product packaging. This is a promising development which should contribute to an improvement in pet safety in the future.

It is important for veterinarians to have at least basic knowledge regarding this issue, so they can provide advice to dog owners on the selection of an appropriate dog safety harness.

The authors would like to emphasise that the construction of a safety harness is crucial for dog safety. The ideal safety harness should be large and padded, unlike walking harnesses. Its dimensions should perfectly fit a particular dog's size and body profile, excluding the possibility of sliding onto the dog's neck and turning around the chest in case of an accident or sudden deceleration. The vertebral column has to be protected and the harness should have more than one point of attachment to distribute the impact load. The tether should be as short as possible. Even a non-fatal serious injury may still result in euthanasia; therefore, it is crucial to consider the quality of dog safety harnesses.

Acknowledgement

The authors would like to thank the following for their contributions: MVDr. Robert Just; Zuzana Lickova; Oleksandra Norwick; MVDr. Leona Rauserova, Ph.D.; Mohammed I. Sajid, BMedSci; Zuzana Sehnalova.

REFERENCES

ADAC (2008): Test report: Securing Pets in Car. Online [cited on 2014 August 12]. Available from: http://wachusett.pss-web.net/Test%20report%20pets%20in%20cars-1.pdf

doi: 10.17221/8389-VETMED

CPS – Center for Pet Safety (2013): Harness Crashworthiness Study Summary Report. Online [cited on 2014 August 12]. Available from: http://centerforpetsafety.org/wp-content/uploads/2012/05/2013_cps_harness_study_summary_final_rev101113.pdf

CPS – Center for Pet Safety (2014): Center for Pet Safety Announces Safety Harness Certification. Online [cited on 2014 August 14]. Available from: http://www.prweb.com/releases/2014/07/prweb12014342.htm

Hirt M, Antonin V, Beran M, Hottmar P, Krejzlik Z, Lacina P, Mraz J, Vorel F, Wotke J. (1998): Selected chapters of Forensic Medicine (in Czech).: 1st ed. Masaryk University Press, Brno. 76 pp.

NRMA Insurance (2013): Dog car harness test. Online [cited on 2014 August 12]. Available from: http://www.nrma.com.au/paws-and-secure-your-puppy

Received: 2015–03–14
Accepted after corrections: 2015–06–10

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