CASE REPORT

An uncommon suicide method: Self-strangulation by vehicle-assisted ligature

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Received 31 May 2013; revised 17 June 2013; accepted 12 August 2013
Available online 20 September 2013

KEYWORDS
Motor-vehicle assisted suicide; Self-strangulation; Ligature strangulation; Suicide; Forensic pathology

Abstract  Self-strangulation is a very uncommon method of suicide. Deaths by vehicle-assisted ligature are rarely published and mainly related to decapitation. We report an unusual case of self-strangulation where a body was found dead inside a car with a rope round his neck and tied to a bridge banister. The rope was broken at 20 meters from the vehicle while the victim was driving his car away. The manner of death was determined as suicide based on objective scene investigation, autopsy and witness testimony. This case is reported for its rarity due to the method of suicide employed by the victim and because it was not related to decapitation.

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Peer review under responsibility of Forensic Medicine Authority.

1. Introduction

Rare and unusual methods employed to achieve self-strangulation attract the attention of the scientific community for the intellectual insights that these cases provide to the literature. Evaluation of the manner of death in such cases of ligature strangulation can be an extremely complex objective. A possibility of self-strangulation being confused with homicide exists primarily owing to the wide prevalent belief that it is impossible to carry out self-strangulation as a means of suicide.

This case is reported here for its rarity and the unusual method adopted by a victim who committed suicide by self-strangulation with a vehicle-assisted ligature.

2. The case

A 51-year-old man was found dead inside a crashed car (Fig. 1a); his body was partially seated in the front passenger’s seat and his feet were located on the floor in the driver’s seat (Fig. 2). He was not wearing the seat belt. There was a rope ligature around his neck. The free end of this rope ligature (0.7 cm in diameter) had been tied to a bridge banister, and it snapped at 20 m from the vehicle (Fig. 1c). A cyclist witnessed the event when the vehicle was accelerated and the rope was being tensed and broken. The motor vehicle crashed onto the verge, and tire marks were found on the road. The distance between the vehicle and the banister was
approximately 100 m. When inspecting the crime scene surroundings, the backrest of the front passenger’s seat was found broken off. The right back passenger’s window and the frame were broken (Fig. 1b).

No signs of dragging of the body or struggle were present at the scene. The body was not fully rigor and there was no fixed posterior lividity noted. A careful examination of the victim’s belongings was performed and no suicide note was found. The deceased had a history of depression in treatment, but there was no evidence of previous autolytic attempts. According to his relatives, he was very concerned about his job and the possibility of his being fired.

The deceased was a well-built male: 169 cm and 63.5 kg. Body mass index: 22.23 kg/m². The external inspection at autopsy showed a double knot 3 cm below his right angle mandible, with well-demarcated encircling abrasion zone, about 0.9 cm wide with multiple imprints of the rope around the neck pressed by the tightened ligature. The ligature mark was circular, in a pallid area, and discontinuous (4 cm) in the area of the knot (Fig. 3). The character of the ligature around the neck completely corresponded to the ligature that was tied around the victim’s neck at the time of his death. His tongue was bitten and bloody mucus was also present in the nostrils and mouth. Hemorrhagic petechiae were prominent in the eyelids, conjunctivae and oral mucosa and subcutaneous emphysema under the ligature. There was lack of petechia in the lower body. There were surface-level cuts caused by the broken glass of the window.

No needle puncture sites or tracks were identified. There were no signs of ejaculation and there was an absence of sexual signs of intercourse. No other injuries like defense wounds were found on the body.

Internal examination revealed bilateral sternocleidomastoid muscle hemorrhage and the left sternocleidomastoid muscle was partially lacerated. There was submucosal hemorrhage on the bottom of the thyroid cartilage. The trachea was...
completely sectioned with partial rupture of the esophagus (Fig. 4) and laceration of both carotid arteries was also found (Fig. 5).

The lungs were edematous (right lung, 650 g; left lung 655 g) with some sub-pleural petechial hemorrhages and there was blood aspiration into the airways and into the lungs. The brain was markedly swollen. Gross anatomic evidence of natural disease was not found.

DNA results did not implicate another person, and the oral and rectal swabs were negative for spermatozoa. The toxicological analysis of the peripheral blood showed no signs of alcohol or drug ingestion.

In short, the autopsy showed the classic signs of asphyxia and severe cervical injuries.

3. Discussion and conclusions

The main difficulty for forensic pathologists when managing ligature strangulation is to establish the manner of death. It is based on the fact that ligature strangulation is a very well known method of homicide. Self-strangulation is a very uncommon method of suicide though some cases have been described. A victim committing suicide by ligature strangulation often proves to be very resourceful in finding or devising the lethal ligature. Although the reported case is unusual, some authors have published previous references of vehicle-assisted ligature and they are mainly related to decapitation.

It must be kept in mind that the assessment of a self-strangulation, with regard to the manner of death, is based on an analysis of the injury pattern and the scene of the investigation.

In this case and in order to establish the manner of death, three different possibilities were taken into account: was it a homicide, suicide or an accident?

The suicide act of self-strangulation must be distinguished from homicide, which needs an objective scene investigation, autopsy and anamnesis in order to elucidate the manner of death. A proper medico-legal evaluation of the crime scene and post-mortem examination with systematical inspection are of great importance in such cases. Self-strangulation may be mistaken for homicide because it is widely believed to be nearly impossible to carry out this act without assistance, but with vehicle-assisted ligature, it becomes easier. The homicidal hypothesis was excluded because there was the declaration of the witness, the absence of signs of struggle, and because no signs of sexual intercourse were found and the DNA laboratory analyses were also negative.

The accidental hypothesis was excluded because it is impossible to carry out such ligature by accident. Self-strangulation in the context of autoerotic activity has been reported as an accident, but in the context of a planned suicide like the case reported here is rare.

The remaining hypothesis is that it was a suicidal death. The approach was a very important tool to understand what happened. Two forces were found acting on the neck: the tensile strength of the rope and the forward motion of the vehicle. This force was undoubtedly pressure and tightening of the ligature. The rope was broken off due to the forward motion of the vehicle. Perhaps if the rope had not broken, the body would have been decapitated like the cases previously reported in the literature. The degree of cervical trauma was greater than in standard ligatures as a consequence of the kinetic energy of the accelerated car. This method seems to exhibit a very high readiness for self-destruction in the victim.

To sum up, in this very unusual case, all the collected data strongly supported the hypothesis of a suicidal death by vehicle-assisted ligature. This case is rarely found because of the method of suicide. In cases like the one reported here, it is important for the investigating forensic pathologist to keep the range of documented methods in mind.
Funding
None.

Conflict of interest
None declared.

Ethical approval
Ethical approval was taken from Legal Medicine Institute at Calatunyana, Spain.

Acknowledgments
The authors are deeply in debt with: Mossos d’Esquadra (Catalonian Police), Mr. Eduardo Aizpun, Mrs. Cel’ia Rudilla, and technical specialists in pathology belonging to the Pathology Service of the IMLC for their assistance.

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