



UNUSUAL ASPHYXIAL DEATHS - Case Reports

Poposka V., Jakovski Z., Jankova-Ajanovska R., Pavlovski G., Stankov A., Duma A.

Institute of Forensic Medicine, Criminology and Medical Deontology, Faculty of Medicine, University "Ss. Cyril and Methodius" Skopje, Republic of Macedonia

ABSTRACT

Violent mechanical asphyxiation as a cause of death in the forensic practice is frequent and usual occurrence, notwithstanding whether it is a homicide, suicide or an accident.

Purpose of this paper is to present unusual ways of occurrence of violent asphyxiation with four cases.

Material and methods: four death cases have been analyzed with cause of death being violent asphyxiation occurred in an unusual way, such as: neck compression case, case of stuffing of the larynx-pharynx cavity, a case of a combination of positioned asphyxia and neck compression and a case of ambient asphyxia combined with hypothermia. From analyzed cases it was concluded that the death of two of the cases was a result of an accident, one is a murder case, and one a suicide.

Results: The external examination of the body revealed surface injuries, conjunctivas hyperaemia and typical outline and colour of livores mortis, whereas the finding of internal examination of the organs revealed atypical changes: congestion of the organs, petechial haemorrhages of the pleura and epicard. Death with analyzed cases has occurred as a result of an unusual way of asphyxia, a combination of different asphyxias or a combination of asphyxia and hypothermia and therefore it is interesting to find out which is the prevailing one.

Conclusion: active participation at on-the-spot inspection, analysis of circumstances preceding the event and exclusion of other reasons for death are necessary upon adopting the final conclusion regarding violent asphyxias as a cause for death.

Key words: unusual asphyxia, accident, homicide, suicide

Council for Innovative Research

Peer Review Research Publishing System

Journal: JOURNAL OF ADVANCES IN BIOLOGY

Vol 5, No.1

editor@cirjab.com

www.cirjab.com, www.cirworld.com

INTRODUCTION

Asphyxia is a disorder or breathing arrest, i.e. lack of oxygen (anoxaemia) and accumulation of own carbon dioxide (hypercapnia) in the body.

Respiratory process, i.e. the normal gas exchange in the body requires fulfilment of several conditions: normal composition of breathing air, access to respiratory tract – the nose and mouth, conductivity of respiratory tract, normal condition of the lungs, blood and tissues and normal function of respiratory centre.

Disorder or ceasure of any of these conditions cause asphyxia which might be natural or violent. Violent asphyxias, by the manner of occurrence can be mechanical, physical, chemical and asphyxias which occur due to inadequate composition of the air (ambient asphyxias).[1,2]

In forensic practice the violent mechanical asphyxias as cause of death are frequent and usual occurrence, notwithstanding whether it is murder, suicide or accident. Yet sometimes death is caused by an asphyxia which in regard to the manner it has occurred is unusual and it requires detail analysis of the event and excluding other reasons for death.

PURPOSE

The purpose of this paper is to present unusual ways of occurrence of violent asphyxiation with four cases autopsied in our Institute.

MATERIAL AND METHODS

Case 1

Violent asphyxia due to neck compression – an accident

A boy at the age of 14, early in the morning, after an alert of a person passing by for hearing call for help, has been found in a tobacco shop in the town centre. The inspection revealed that the boy's body was in a hanging position, the head stuck in the ventilation hole at the roof of the tobacco shop, the cover pushing the top of the head, and the ridge of the ventilation hole pushing the front of the neck. The right arm was laid on the roof, the left arm hanging loosely by the body whereas 20 cm below the feet there was a chair (Fig. 1).

Autopsy showed horizontal crush of the front of the neck above the Adam's apple and small crushes of the face, body and extremities (Fig. 2). Stuffing of the neck showed no injures of the soft tissues and neck organs. Internal finding revealed a small hematoma of the soft parts of the vertex region, petechial hemorrhages of the visceral pleura, pericardium, epicard and congestion of all organs. Toxicological analyses proved the presence of small quantities of opiates (716,68 ng/ml) and benzodiazepines (833,80 ng/ml) in the urine.

It was concluded that death has occurred as a result of a violent asphyxiation due to compression of the front of the neck and closure of larynx-pharynx cavity by pushing of the tongue upwards and to the front.



Fig. 1 A boy found in a tobacco shop



Fig. 2 Crush of the neck and face

Case 2

Violent asphyxia due to stuffing of the larynx-pharynx cavity - murder

A woman at the age of 69, found dead in a barn in the yard of her house. The body was found laid on the back, hands tied on the back, legs tied with nylon bag and tied with nylon rope to the barn. The mouth was wrapped with white adhesive tape, mouth was open and tongue suppressed backwards (Fig. 3 and Fig. 4).



Fig. 3 A woman found in a barn



Fig. 4 A mouth wrap with an adhesive tape

The external examination of the body during autopsy revealed petechial hemorrhages of the conjunctivas, few small bruises and haematomas of the face and extremities. Internal finding revealed petechial hemorrhages of the pleura, epicard and congestion of all organs. Toxicological analysis revealed no alcohol, medications and narcotics.

It was concluded that death has occurred as a result of a violent asphyxiation due to stuffing of the larynx-pharynx cavity. The adhesive tape, tied around the open mouth has suppressed the tongue backwards and disabled air circulation through the larynx-pharynx cavity.

Case 3

Position asphyxia and neck compression – accidental

A man at the age of 54, a driver, found in an overturned van. According to data from witnesses of the event, the van has overturned twice on a slope, stopped on its roof, the driver remained stuck with his head and neck between the steering wheel and the front dashboard of the vehicle. For some time he kicked with the legs but died until released from the vehicle.

The external examination of the body during autopsy revealed cyanoses of the face (Fig. 5), small bruises, squeezes and hematomas of the head, body and extremities. On the right side of the neck there was dark purple hematoma covering an area of 8x4 cm, whereas upon dissection it was found out that hematoma has gone in depth and taken over the muscles also. Internal finding revealed petechial hemorrhages of the pleura (Fig. 6), epicard and congestion of all organs. Toxicological analyses did not reveal presence of alcohol, medications and narcotics.

It was concluded that death has occurred as a result of a violent asphyxiation, i.e. combination of position asphyxia and neck compression. Position of the body with the head downwards, stuck between the steering wheel and the front dashboard, with simultaneous compression of the right side of the neck shows that the asphyxia has occurred due to a special position of the body which obstructed the normal excursions of the chest and the diaphragm as well as a pressure over the respiratory tracts and blood vessels on the right side of the neck, causing reduced oxygenation of the blood.



Fig. 5 Cyanoses of the face



Fig. 6 Pleural petechiae

Case 4

Ambient asphyxia – suicide

A man at the age of 29 found dead in a deep freezer by his mother. The night before the deep freezer was off and emptied. The room was locked from the inside whereas the exact time of switching in the freezer and entering the person in it is unknown. When found, the body was completely frozen, kneeling on the knees leaned to the front (Fig. 7).



Fig. 7 Frozen body in a deep freezer

The external examination of the body during autopsy revealed presence of livores mortis on the front side of the chest, belly and the lower part of the legs, in red colour, diffusely deployed and hyperaemia of conjunctives. Internal finding revealed petechial hemorrhages of the pleura and epicard, congestion of all organs, the blood was liquid and of red colour, due to body staying in low temperature. Toxicological analysis showed presence of small quantity of benzodiazepines in the urine.

It was concluded that death has occurred as a result of a ambient asphyxia, i.e. insufficient quantity of oxygen in the breathing atmosphere. The normal ratio of $O_2:CO_2$ (21% : 0,03%), has been disturbed in the closed freezer due to



consumption of oxygen and increase of the concentration of carbon dioxide, thus disabling the generation of necessary quantities of oxyhemoglobine and causing asphyxia. In the 310 litres freezer, after the man has entered inside there was about 150 litres of air, and the time needed to ventilate this quantity of air through respiratory organs is about 20 minutes, and the death has occurred in that period of time. Lowering of body temperature is an additional factor, because body temperature below 34°C causes reduced joining of the oxygen to the haemoglobin and causing difficulty in its deliverance to the tissues, i.e. hypoxia.

DISCUSSION

Violent asphyxiation occurred in an unusual ways are cases which require detailed analysis of the event and of the finding from autopsy.

Mechanical asphyxiation caused by neck compression can result from clenching with hands, tightening with a rope or cloth, and hanging, and our Case No. 1 is about an unusual event where mechanical asphyxiation occurred by compression of the front side of the neck as a result of a boy's head being stuck in the ventilation hole, and the body hang loosely.[3]

The second Case is about suffocation asphyxiation where the stuffing of the larynx-pharynx cavity has not occurred by stuffing with food or some other foreign body, but by the victim's tongue which was suppressed backwards by the lace tied up around the mouth. In this event, although the aim of attackers was to hush the victim, not to kill her, yet it is a murder case.[3]

Position asphyxia is a result of a special position of the body where movements of the chest and diaphragm upon inhale and exhale are obstructed. Such asphyxia occur most often at victims affected by alcohol or whose hands and legs have been tied on the back side of the body and left to lay on their belly due to which they are not able to free themselves from the forced position.[4-6] Our case of position asphyxia relates to a car accident where the vehicle has upturned on its roof and the victim remained stuck in a forced position with his head downwards and the right side of the neck compressed. There was no alcohol or other toxic substances found in this victim, nevertheless the victim was not able to release himself from the forced position due to compression to the neck which caused reduced oxygenation of the brain and fast fainting.

The case of ambient asphyxia combined with hypothermia, is an unusual case of a suicide. Ambient asphyxia is most often a result of an accident, for e.g. when children play they can lock themselves in old refrigerators or trunks and cannot go out. Lowe and Diaz have described a case where death occurred as a result of a combination of hypobaria, hypothermia and hypoxia, and it was a passenger who illegally entered in the lower part of the airplane fuselage where wheels are placed [7].

CONCLUSION

With death cases resulting from violent asphyxia occurring in an unusual manner, cause of death can not be determined only by autopsy, because there are not clearly specific findings.

Upon autopsy, the external and local findings are most often insignificant, and the internal finding is unspecific (organ congestion, petechiae of conjunctivas, pleura, epicard).

To adopt final conclusion regarding unusual asphyxia as cause of death, it is necessary to actively participate upon on-the-spot inspection, to analyse the circumstances preceding the event and exclude other reasons of death.

REFERENCES

- [1] Dimaio V, Dimaio D, (2001) Mechanical Asphyxia. Forensic Pathology. 2nd ed. Boca Raton, FL: CRC Press
- [2] Byard RW, Williams D, James RA, Gilbert JD.(2001) Diagnostic issues in unusual asphyxial deats, J Clin.Forensic Med., Dec.8(4):214-7
- [3] Shkrum J.M., Ramsay A.D.(2007)Forensic Pathology of Trauma: Common problems for the Pathologist, Humana Press Inc. Totowa, New Jersey.
- [4] Benomran FA., Hassan Al.,(2011) An unusual accidental death from positional asphyxia, Am.J.Forensic Med.Pathol., Mar.32(1): 31-4
- [5] Wankhede A.G., Dongre A.P.(2002) Head injury with traumatic and postural asphyxia; A case repoprt. Medicine, Science and Law, 42(4); 358-9
- [6] Iannaccone S., Grochova Z., Bobrov N., Longauer E., Szabo M.(2001) Death in an unusual body position. Soud.Lek. 46(4):58-61
- [7] Loewe C, Diaz F.(2009) Unusual accidental asphyxial deaths. BioMedSearch (American College of forensic Examiners). <http://www.biomedsearch.com/article/Unusual-accidental-asphyxial-deaths/215306196.html>. Accessed 22 December 2009