



REVIEW ARTICLE

Forensic Medicine

INJURIES AND DEATH ASSOCIATED WITH PHYSICAL RESTRAINING – SOME FORENSIC ASPECTS

KEY WORDS: Finger poked contusions, Neck compression, Positional asphyxia, Restraining

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ABSTRACT

The process of physically restraining the movement of a person is seen to be practiced by various law enforcing agencies like the police and military so as to control a violent personnel. Medical restraining is carried out on psychiatric patients so as to manage them. Restraining is also seen in crimes like robbery, kidnapping, sexual offences and murders without bloodshed. When not used properly or with care, restraining techniques can cause injuries or even death. During post mortem examination, the Forensic Medicine examiner might come across several such injuries and deaths. Proper identification of restrain injuries and deriving their probable manner of causation is very important to solve the mystery behind numerous unexplained or controversial deaths. Finger poked contusions over the inner aspect of upper arms are classically seen during manual restraining. In certain cases death can occur following neck compression, positional asphyxia, cardiac arrhythmia, and blunt trauma chest. This review paper is structured in view of identifying the pattern and type of restrain injuries during post mortem examination and the different mechanisms of death associated with restraining. This knowledge can hopefully shed some light on the crime behind many unnatural deaths.

INTRODUCTION

In 2020, the world witnessed a great protest for justice following the murder of an African-American man named George Floyd. The death happened when Minneapolis ex-police officer, Derek Chauvin, a white police officer, knelt on Floyd's neck after he was handcuffed and lying face down. The post mortem report from Hennepin County clearly stated that the death was due to cardio pulmonary arrest complicating law enforcement subdual restraint and neck compression.

Cases brought from psychiatric hospitals and treated cases of poisoning deaths could show multiple contusions especially over the wrists and inner aspect of upper arms during a medico legal autopsy. There are some suspicious cases of unnatural deaths which will show the presence of discrete contusions over some specific areas.

Cases of the above mentioned genus demand a definite opinion from a forensic expert such that justice prevails. If the expert fails to find the exact cause of death and the manner of causation of the injuries there is a high chance that perpetrators shall become confident about getting away with a crime. Having thorough knowledge about restraining and its expected complications is mandatory for a forensic expert to come up with the correct interpretation on how a crime has been committed. A study in autopsy reports of the Institute of Forensic Medicine in Munich from 1997 to 2010 showed that 26 cases of death while the individual was physically restrained. Three of these cases involved patients who died of natural causes while restrained, and one was a suicide. The remaining 22 deaths were caused solely by physical restraint.²

Definition

Restraining means purposefully limiting or obstructing the freedom of a person's bodily movement especially in order to stop them from doing something Subduing is another word with a similar meaning.

There are mainly three types of restraining

1) Physical restraining

Physical restraining involves controlling movements using various equipments like handcuffs, leg cuffs, ropes, ties, wrist shackles, chains etc. It can also be done manually with an arm lock or by forcefully grabbing the shoulders, upper arms or legs by one or more persons.

2) Chemical restraining

In chemical restraining, lacrimation gases, various sedatives or drugs are administered in order to prevent the movement of the person. This also includes smoke inhalation.

3) Environmental restraining

This technique involves putting the person in a closed room or chamber or tying the person to a large stone or pillar or a similar large object.

This article focuses on the various complications associated with physical restraining. Physical restraining is commonly done by three groups of persons

a) Law enforcing agencies

During the process of arrest or custody or after arresting a person law enforcing agencies use restraining for controlling the combatant behaviour or resistance of the victim.



Image. 1. George Floyd being restrained.

a) Psychiatric nursing

Various forms of safe restraining methods are practiced in psychiatric nursing homes so as to control agitated patients and to administer treatment modalities when they are not cooperative. Restraint devices are not limited to vests or wrist/ankle ties, but also include full length bedrails, net beds, waist belts, hand mitts, and so on.¹



Image.2. Restraining methods in psychiatric hospitals

a) Criminal Restraining

Restraining another person knowingly and without legal authority so as to interfere substantially with such person's liberty is termed criminal restraining. It is executed by a person or a group of persons in order to make one incapacitated for aiding robbery or sexual exploitation. Criminal gangs eliminate unwanted people without bloodshed and project it as suicide in order to escape from

law. This is done with conspiracy as the person is killed by means of neck violence, smothering, or forceful administration of poison with the help of forceful restraining and the body will be suspended as hanging or the crime scene is manipulated so as to project it as a suicide. There was a cult group in medieval India known as Thuggees, who practiced restraining to kill their victims. The classical injuries of strangulation or throttling may not be present as the one to one force is divided among many and also the person under restraining will fail to offer resistance.



Image.3. Thuggees killing their victim without blood shed

Complications of restraining

Physical restraining is a complicated act as a slightly excess force can lead to various complications from minimal injuries to serious adverse effects and death. 50% of the complications are encountered during the struggle and the remaining 50% is from the way in which a person is restrained. The following are the adverse effects routinely associated with restraining.

1) Injuries

Injuries associated with restraining vary based on the restraining method used. A hand cuffed person may have abrasions or lacerations around wrists. If the cuts are deep enough to produce vascular injury, slow bleeding may lead to haemorrhagic shock and finally death. Similarly, ropes and various forms of ties produce abrasions around wrists and ankles. Straps used for hog tie can also produce abrasions and abraded contusions around wrists and ankles.

In cases where a person is restrained manually by another person or a group of people, usual expected injuries are contusions and scratch abrasions. In case of planned restraints, the perpetrators may use gloves and therefore abrasions will not be visible on the subject. When an assailant grabs a person on the shoulders from behind using both hands, contusions can be seen on top of both shoulders, especially over the clavicles. Finger poked contusions over back of neck may also be visible in such cases. Similarly forcefully restraining a person by holding his legs and hands will be indicated by the presence of contusions of the wrists and hands.

As a natural response to restraining, the victim will offer resistance and this in turn makes the assailants increase their force of restraining. In such cases larger contusions can be seen over those areas where the assailants put forth maximum pressure.

In cases where a victim who is either sitting or lying down is restrained by multiple people by holding legs, hands and shoulders, the size and depth of the contusions are more in legs compared to hands or shoulders. This is because in a normal human being, the leg muscles are stronger and capable of resisting with greater force.

Fracture or dislocation of the toes may also happen without any abrasion due to forceful flexion or extension during struggle. Contusions over front and sides of the knees can also be seen when the flexion of the knee is prevented forcefully. Finger poked contusions can be seen over inner aspect of upper arms in forceful grabbing and over inner aspect of thighs in forceful sexual intercourse. Neck muscles will show

contusions in case of kneeling on neck or arm lock. If the person is restrained in supine position abrasions or abraded contusions are seen over shoulder blades and gluteal regions. If a person was killed by neck violence while he was restrained by other persons, post mortem examination may not show the classical findings as expected in a one to one strangulation or throttling. This is because less amount of force is required to produce asphyxia in a restrained person.

2) Asphyxiation

Faulty restraining techniques can cause asphyxia and death. The excessive force exerted or selection of a wrong area for restraining are the most common reasons for death. Death can occur from postural asphyxia if the respiratory movement is restricted due to the body posture maintained during restraining.³ Traumatic asphyxia can occur if weight has been kept over the back of the trunk in prone position which in turn causes decreased thoracic respiratory movement or airway compression causing asphyxia. In psychiatric nursing, cloth or towels kept over the face to defend spitting or biting can cause asphyxia. Forceful gagging using cloth to stifle cry or verbal abuse is also dangerous. Pulling the arm of the subject across his neck can also lead to asphyxia and death.

3) Neck compression

As in the case of George Floyd, the compression caused in the neck due to kneeling can occlude air passages or the carotid vessels. Neck hold from one side can also result in neck compression. Stimulation of carotid sinus causes bradycardia and result in death. Neck compression by forearms occurs in armlocks.

4) Strangulation

Ropes or ties around neck can be dangerous. Incapertamento⁶ is a ritual strangulation that represents a method of homicide typical of the Italian Mafia in which the victim is restrained in prone position by tying one end of the rope around the ankles of flexed legs and the other end around the neck. This will eventually lead to strangulation when the victim fails to keep the flexed position for long.

5) Emotional hyper arousal – excited delirium

Forceful restraining during police action and the emotional stress associated with the situation can precipitate excited delirium. Here excessive secretion of catecholamine's into circulation occurs which can result in malignant cardiac arrhythmias. Extreme exertion can also cause maximum sympathetic discharge. More over hyper ventilation during exertion causes metabolic acidosis which eventually results in cardiac arrest. In a study of pooled analysis of 168 cases of excited delirium, 104 (62%) were fatal. Aggressive restraint (i.e. manhandling, handcuffs, and hobble ties) was more common in excited delirium related deaths⁴

6) Cardiac arrest

People with pre-existing cardiac diseases in the form of ischemic heart disease or coronary artery disease are prone to develop lethal arrhythmia. Emotional and physical stress of restraining can precipitate this acute cardiac event. Hypoxia can also predispose cardiac arrest.

7) Blunt trauma

Sudden thrust over the chest during a struggle to restrain can cause commotion cordis and sudden cardiac arrest. Post mortem examination cannot detect this.

8) Choking or aspiration

Choking is very common while feeding restrained persons with diminished consciousness or patients who are detained in supine position. Vomits can also go into aspiration. Both scenarios may lead to death from asphyxia, pulmonary oedema or pneumonitis.

9) Smoke inhalation

When there is smoke or inert gas following incomplete

combustion, the subject will tend to inhale and this can cause death either from asphyxia or from toxicity.

10) Drug overdose or drug interaction

Drug overdose is usually seen in medical restraining when psychotropics and other drugs like anticholinergics are used. Kidnapping cases also can go wrong if a non medical person uses this type of drugs in victims.

11) Rhabdomyolysis

Extensive muscle crushing during restraining, some drugs, and exertion during struggle and alcohol abuse can precipitate this condition. In severe cases it can progress to neuroleptic malignant syndrome.

12) Thrombosis

This can be seen in persons who are detained for long especially in mental health care centres. Due to immobilization pulmonary thrombo embolism or thrombophlebitis can occur. Severe catatonic state of the body will also predispose this.

13) Dehydration and starvation

Detaining for criminal purposes or poor attention in nursing homes can cause dehydration and starvation which can be fatal.

14) Hypothermia or hyperthermia

If the subject is not accustomed with the climate of the area of detention the body cannot cope with the atmospheric temperature which precipitates features of hyperthermia or hypothermia.

DISCUSSION

Injuries and deaths following restraining demand a careful approach during the practice of Forensic Medicine. It is important to examine each case in the light of proper history keeping in mind the probability of manipulation so as to ensure that no restraint goes unnoticed. It is the primary duty of the forensic pathologist to suggest the most probable manner of causation of death to the investigating authorities so that they get the right lead to each case. Arriving at a conclusion about the cause of death may be a very difficult and contentious undertaking. The philosophical and pathologic approach ultimately adopted no doubt will be informed by the individual pathologist's experience and equanimity and the particular characteristics of the case.⁵ Restraining injuries are a group of injuries associated with physical restraining of the person either during administration of law, treatment purpose and also in criminal offences like robbery, sexual assault, kidnapping and secret murders. Faulty techniques used or the excessive force exerted on the subject lead to these injuries. Injuries are mostly visible in the form of contusions as far as physical restraining is concerned. Specific areas like wrists, top portion of shoulders, ankles, and knees are to be properly examined during examination and incision test can be performed in all these areas during autopsy. We can expect such deaths following confrontation with police, or deaths occurring in mental hospitals or highly suspicious suicidal death with lack of proper history and suspected conspiracy, restraining injuries are to be looked specifically.

CONCLUSION

Forensic experts play a pivotal role in the society as investigating authorities depend solely on the findings of these experts to find out the nature of crime associated in each case. If the examiner fails to detect and analyze the injuries with regard to the probable manner of causation, the essence of the crime will be lost. Proper knowledge about restraining injuries and deaths associated with restraining is important for the practice of Forensic Medicine. As the famous saying "the eyes cannot see what the mind doesn't know".

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