Medico Legal Autopsies of Mechanical Asphyxial Deaths Carried Out in Allama Iqbal Medical College Lahore during the Year 2013: A Retrospective Study

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ABSTRACT

Background: This study was on all mechanical asphyxias deaths which were received for autopsies in Allam Iqbal Medical College Lahore during the year 2013. The objective was to be carried out a retrospective analysis of 32 autopsies on mechanical asphyxias deaths. The relationship of age and gender was focused.

Methods: Total medico legal autopsies which were carried out at Forensic Medicine Department at AIMC Lahore were 221 during the year of 2013. Out of these, 32 were the cases of mechanical asphyxias deaths which were selected for this study. The documents scrutinized for this purpose were autopsies reports, police papers and hospital history charts.

Results: Out of 221 autopsies cases, 32 cases were of mechanical asphyxias deaths. 22 deaths were strangulated (Homicidal), hanging one, drowning nine and traumatic were found zero.

Conclusion: Out of 221 autopsies cases, 32 cases were of mechanical asphyxias deaths. Asphyxias deaths were mostly homicidal and male & female were equally suffered.

Keywords: Allama Iqbal Medical College (AIMC), Asphyxia, Homicidal

INTRODUCTION

Choking caused by a mechanism that prevents lung ventilation. This mechanism can be internal (by foreign bodies or by drowning) or external (hanging, strangulation, crushing, facial flushing, burial).

General: Asphyxia is the lack of oxygen supply to tissues/organs
Types of asphyxia include suffocation, strangulation / hanging, positional / mechanical / traumatic
Suffocation: Failure of oxygen to reach the blood.
Smothering: obstruction of nose and mouth
Accidental: infant wedged between mattress and wall
Suicidal: placing plastic bag over one’s head and tightening around neck
Homicidal: duct tape across nose and mouth, covering face with pillow, closing off nose and mouth of young child with hand
Overlay: infant death due to parent onto child in bed; involves smothering and mechanical asphyxia

No specific autopsy findings; may see signs of struggle (contusions/abrasions on face and mouth) in adult victims
Choking: blockage of internal airways
Accidental: large food bolus in airway, usually intoxicated adults, elderly with neurodegenerative disorders, young children
Homicidal: gag placed in oropharynx. Must find food bolus or other item in airway, or have report of its prior removal, to confirm choking. Environmental: inadequate oxygen in atmosphere; also called entrapment. Due to oxygen displacement by other gases (in silo), lack of oxygen in small enclosed space (child trapped in refrigerator). No specific autopsy findings
Strangulation / hanging: External pressure on neck resulting in compression of blood vessels and occasionally airway
Strangulation: neck compression due to something other than the victim’s body weight, such as manual compression or ligature tightened by assailant; usually homicidal
Ligature strangulation: the ligature mark on the neck is usually horizontal. If homicidal (most common), may be signs of struggle (abrasions / lacerations and fingernail marks on neck) Suicidal strangulations can occur if individual ties cord or other ligature around neck with some sort of locking device. Accidental strangulations can occur if scarf or
Asphyxia or asphyxiations is a condition of severely deficient supply of oxygen to the body that arises from abnormal breathing. An example of asphyxia is choking. Asphyxia causes generalized hypoxia, which affects primarily the tissues and organs. There are many circumstances that can induce asphyxia, all of which are characterized by an inability of an individual to acquire sufficient oxygen through breathing for an extended period of time. Asphyxia can cause coma or death.

In 2013 about 1.6 million cases of unintentional suffocation occurred1. The word asphyxia is from Ancient Greek ἀ-"without" and sphyxis, "squeeze" (throb of heart)2

Causes: Situations that can cause asphyxia include but are not limited to: the constriction or obstruction of airways, such as from asthma, laryngospasm, or simple blockage from the presence of foreign materials; from being in environments where oxygen is not readily accessible: such as underwater, in a low oxygen atmosphere, or in a vacuum; environments where sufficiently oxygenated air is present, but cannot be adequately breathed because of air contamination such as excessive smoke. Other causes of oxygen deficiency include but are not limited to:

Acute respiratory distress syndrome: Carbon monoxide inhalation, such as that from a car exhaust and the smoke’s emission from a lighted cigarette: carbon monoxide has a higher affinity than oxygen to the hemoglobin in the blood's red blood corpuscles, bonding with it tenaciously, and, in the process, displacing oxygen and preventing the blood from transporting oxygen around the body

Contact with certain chemicals, including pulmonary agents (such as phosgene) and blood agents (such as hydrogen cyanide)

- Drowning
- Drug overdose
- Exposure to extreme low pressure or vacuum to the pattern
- Hanging, specifically suspension or short drop hanging.
- Self-induced hypocapnia by hyperventilation, as in shallow water or deep water blackout and the choking game
- Ondine's curse, central alveolar hypoventilation syndrome, or primary alveolar hypventilation, a disorder of the autonomic nervous system in which a patient must consciously breathe; although it is often said that persons with this disease will die if they fall asleep, this is not usually the case

- Respiratory diseases
- Sleep apnea
- A seizure which stops breathing activity
- Strangling
- Breaking the wind pipe.

Smothering: "Smother" redirects here. For other uses, see Smother (disambiguation). Smothering is the mechanical obstruction of the flow of air from the environment into the mouth and/or nostrils, for instance, by covering the mouth and nose with a
Compressive asphyxia is when a person is restrained and left alone prone, such as in a police vehicle, and is unable to reposition him or herself in order to breathe. The death can be in the vehicle, or following loss of consciousness to be repositioned. In confined spaces, people push and lean against each other; evidence from bent steel railings in several fatal crowd disasters have shown horizontal forces over 4500 N (equivalent to a weight of approximately 450kg, or 1014lbs). In cases where people have stacked up on each other forming a human pile, estimations have been made of around 380kg (838lbs) of compressive weight in the lowest layer.

"Positional" or "restraint" asphyxia is when a person is restrained and left alone prone, such as in a vehicle, and is unable to reposition him or herself in order to breathe. This occurs mostly during restraint and handcuffing situations by law enforcement, including psychiatric incidents. The weight of the restraint(s) doing the compression may contribute to what is attributed to positional asphyxia. Therefore, passive deaths following custody restraint that are presumed to be the result of positional asphyxia may actually be examples of asphyxia occurring during the restraint process.

Chest compression is also featured in various grappling combat sports, where it is sometimes called "wringing." Such techniques are used either to tire the opponent or as complementary or distractive moves in combination with pinning holds, or sometimes even as submission holds. Examples of chest compression include the knee-on-stomach position; or techniques such as leg scissors (also referred to as body scissors and in budō referred to as do-jime).
"trunk strangle" or "body triangle")10 where a participant wraps his or her legs around the opponent's midsection and squeezes them together11. Pressing is a form of torture or execution that works through asphyxia e.g.Burking. **Perinatal asphyxia:** Perinatal asphyxia is the medical condition resulting from deprivation of oxygen (hypoxia) to a newborn infant long enough to cause apparent harm. It results most commonly from a drop in maternal blood pressure or interference during delivery with blood flow to the infant's brain. This can occur as a result of inadequate circulation or perfusion, impaired respiratory effort, or inadequate ventilation12. There has long been a scientific debate over whether newborn infants with asphyxia should be resuscitated with 100% oxygen or normal air12. It has been demonstrated that high concentrations of oxygen lead to generation of oxygen free radicals, which have a role in reperfusion injury after asphyxia13. Research by Ola Didrik Saugstad and others led to new international guidelines on newborn resuscitation in 2010, recommending the use of normal air instead of 100% oxygen14,15.

**METHODOLOGY**

Total medico legal autopsies which were carried out at Forensic Medicine Department at AICM Lahore were 221 during the year of 2013. Out of these, 32 were the cases of mechanical asphyxias deaths which were selected for this study. The documents scrutinized for this purpose were autopsies reports, police papers and hospital history charts. All data was collected and analyzed by using SPSS 13.

**RESULTS AND DISCUSSION**

Out of 221 autopsies cases, 32 cases were of mechanical asphyxias deaths. 23 deaths were strangulated (Homicidal), hanging three, drowning five, throttling one and traumatic were found zero (Table 1). Out of 23 deaths (Strangulated) 13 were female and 10 were male (Table 2).

<table>
<thead>
<tr>
<th>Types of Asphyxias Deaths</th>
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<tbody>
<tr>
<td>Strangulated</td>
<td>23(71%)</td>
</tr>
<tr>
<td>Drowning</td>
<td>5(15%)</td>
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<tr>
<td>Hanging</td>
<td>3(12%)</td>
</tr>
<tr>
<td>Traumatic</td>
<td>0</td>
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<tr>
<td>Throttling</td>
<td>1(2%)</td>
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Table 2:

<table>
<thead>
<tr>
<th>Gender</th>
<th>Strangulated Asphyxia Death</th>
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<tr>
<td>Male</td>
<td>10(44%)</td>
</tr>
<tr>
<td>Female</td>
<td>13(56%)</td>
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</tbody>
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**CONCLUSIONS & RECOMMENDATIONS**

Two hundred and twenty one autopsies cases, 32 cases were of mechanical asphyxias deaths. Asphyxias deaths were mostly homicidal and male & female were almost equally suffered.

Following recommendations were suggested:

1. Need for massive improvement of the law & order situation of the country.
2. Impediment of Social Taboos.
3. Improve the social and economy of the population.

**REFERENCES**

14. ILCOR Neonatal resuscitation Guidelines 2010
15. Norwegian paediatrician honoured by University of Athens, Norway.