

A Study of Medico Legal Autopsies of Poisonous Deaths carried Out in Allama Iqbal Medical College Lahore during the Year 2015

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ABSTRACT

This study was on all poisonous deaths which were received for autopsies in Forensic Medicine Department, Allama Iqbal Medical College Lahore during the year 2015. The objective was to be carried out a retrospective analysis of all autopsies due to poisonous Deaths. The relationship of age and gender was also focused. Total medico legal autopsies which were carried out at Forensic Medicine Department at AIMC Lahore were 160 during the year of 2015. Out of these, 10 were the cases of poisonous deaths which were selected for this study. The documents scrutinized for this purpose were autopsies reports, police papers and hospital history charts. Out of 160 total autopsies cases, 10 cases were of poisonous death, 7 deaths were Homicidal and 03 were suicidal.

Conclusion: Out of 160 autopsies cases, 10 cases were of poisonous death, 7 deaths were Homicidal and 03 were suicidal and all were female.

Keywords: Allama Iqbal Medical College (AIMC), Poisonous Deaths, Homicidal

INTRODUCTION

In biology, **poisons** are substances that cause disturbances in organisms, usually by chemical reaction or other activity on the molecular scale, when an organism absorbs a sufficient quantity^{1,2}.

The fields of medicine (particularly veterinary) and zoology often distinguish a poison from a toxin, and from a venom. Toxins are poisons produced by organisms in nature, and venoms are toxins injected by a bite or sting (this is exclusive to animals). The difference between venom and other poisons is the delivery method. Industry, agriculture, and other sectors use poisons for reasons other than their toxicity. Pesticides are one group of substances whose toxicity is their prime purpose.

In 2013, 3.3 million cases of unintentional poisonings occurred³. This resulted in 98,000 deaths worldwide, down from 120,000 deaths in 1990⁴.

The term "poison" is often used colloquially to describe any harmful substance—particularly corrosive substances, carcinogens, mutagens, teratogens and harmful pollutants, and to exaggerate the dangers of chemicals. Paracelsus (1493–1541), the father of toxicology, once wrote: "Everything is

poison, there is poison in everything. Only the dose makes a thing not a poison⁵ (see median lethal dose).

Animal poisons delivered subcutaneously (e.g., by sting or bite) are also called venom. In normal usage, a poisonous organism is one that is harmful to consume, but a venomous organism uses venom to kill its prey or defend itself while still alive. A single organism can be both poisonous and venomous, but that is rare⁶.

Biologically speaking, any substance, if given in large enough amounts, is poisonous and can cause death. For instance, several kilograms worth of water would constitute a lethal dose. Many substances used as medications—such as fentanyl—have an LD₅₀ only one order of magnitude greater than the ED₅₀. An alternative classification distinguishes between lethal substances that provide a therapeutic value and those that do not.

Acute poisoning is exposure to a poison on one occasion or during a short period of time. Symptoms develop in close relation to the exposure. Absorption of a poison is necessary for systemic poisoning. In contrast, substances that destroy tissue but do not absorb, such as lye, are classified as corrosives rather than poisons.

Chronic poisoning is long-term repeated or continuous exposure to a poison where symptoms do not occur immediately or after each exposure. The patient gradually becomes ill, or becomes ill after a long latent period. Chronic poisoning most commonly occurs following exposure to poisons that bioaccumulate, or are biomagnified, such as mercury, gadolinium, and lead.

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Inhaled or ingested cyanide, used as a method of execution in gas chambers, almost instantly starves the body of energy by inhibiting the enzymes in mitochondria that make ATP. Intravenous injection of an unnaturally high concentration of potassium chloride, such as in the execution of prisoners in parts of the United States, quickly stops the heart by eliminating the cell potential necessary for muscle contraction.

Most biocides, including pesticides, are created to act as poisons to target organisms, although acute or less observable chronic poisoning can also occur in non-target organisms (secondary poisoning), including the humans who apply the biocides and other beneficial organisms e.g., the herbicide 2,4-D imitates the action of a plant hormone, which makes its lethal toxicity specific to plants. Indeed, 2,4-D is not a poison, but classified as "harmful" (EU).

Management: Injected poisons (e.g., from the sting of animals) can be treated by binding the affected body part with a pressure bandage and placing the affected body part in hot water (with a temperature of 50°C). The pressure bandage prevents the poison being pumped throughout the body, and the hot water breaks it down. This treatment, however, only works with poisons composed of protein-molecules⁷.

Decontamination: Activated charcoal is the treatment of choice to prevent poison absorption. It is usually administered when the patient is in the emergency room or by a trained emergency healthcare provider such as a Paramedic or EMT. However, charcoal is ineffective against metals such as sodium, potassium, and lithium, and alcohols and glycols; it is also not recommended for ingestion of corrosive chemicals such as acids and alkalis⁸.

Cathartics were postulated to decrease absorption by increasing the expulsion of the poison from the gastrointestinal tract. There are two types of cathartics used in poisoned patients; saline cathartics (sodium sulfate, magnesium citrate, magnesium sulfate) and saccharide cathartics (sorbitol). They do not appear to improve patient outcome and are no longer recommended⁹.

Emesis (i.e., induced by ipecac) is no longer recommended in poisoning situations, because vomiting is ineffective at removing poisons¹⁰.

Whole bowel irrigation cleanses the bowel. This is achieved by giving the patient large amounts of a polyethylene glycol solution. The osmotically balanced polyethylene glycol solution is not absorbed into the body, having the effect of flushing out the entire gastrointestinal tract. Its major uses are to treat ingestion of sustained release drugs, toxins not absorbed by activated charcoal (e.g., lithium, iron), and for removal of ingested drug packets (body packing/smuggling)¹².

Enhanced excretion: In 2010, poisoning resulted in about 180,000 deaths down from 200,000 in 1990¹⁴. There were approximately 727,500 emergency department visits in the United States involving poisonings—3.3% of all injury-related encounters¹⁵.

Applications: Poisonous compounds may be useful either for their toxicity, or, more often, because of another chemical property, such as specific chemical reactivity. Poisons are widely used in industry and agriculture, as chemical reagents, solvents or complexing reagents, e.g., carbon, methanol and sodium cyanide, respectively. They are less common in household use, with occasional exceptions such as ammonia and methanol. For instance, phosgene is a highly reactive nucleophile acceptor, which makes it an excellent reagent for polymerizing diols and diamines to produce polycarbonate and polyurethane plastics.

History: Throughout human history, intentional application of poison has been used as a method of murder, pest-control, suicide, and execution^{16,17}. As a method of execution, poison has been ingested, as the ancient Athenians did (see Socrates), inhaled, as with carbon monoxide or hydrogen cyanide (see gas chamber), or injected (see lethal injection). Poison's lethal effect can be combined with its allegedly magical powers; an example is the Chinese gu poison. Poison was also employed in gunpowder warfare e.g., 14th-century Chinese text of the *Huolongjing* written by Jiao Yu outlined the use of a poisonous gunpowder mixture to fill cast iron grenadebombs¹⁸.



Poisoning of Queen Bona

METHODOLOGY

Total medico legal autopsies which were carried out at Forensic Medicine Department at AIMC Lahore were 160 during the year of 2015. Out of these, 10 were the cases of poisonous 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 160 total autopsies cases which were carried out in Forensic Medicine Department AIMC Lahore, 10 cases were of poisonous deaths -7 were Homicidal and 03 were suicidal. All were female. Table1, Table 2 and Table 3

Table 1

Total during the year 2015	Autopsies poisonous deaths cases	%age
160	10	7

Table 2:

Gender	Poisonous Deaths	%age
Male	0	0
Female	10	100

Table .3:

	Poisonous Deaths	%age
Homicidal	7	70
Sucidal	3	30
Total	10	100

CONCLUSIONS & RECOMMENDATIONS

One hundred and sixty autopsies cases, 10 cases were poisonous deaths and all were female. 7 were homicidal and 3 were suicidal. Following recommendations were suggested:

1. Need for massive improvement of the law & order situation of the country.
2. Impediment of Social Taboos.
3. Improvement of the social and economy of the people and country
4. Effective and prompt drug license Authority.

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