



CARBON MONOXIDE, THE SILENT KILLER – A CASE REPORT

Forensic Medicine

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ABSTRACT

A 36 years old female committed suicide in sealed washroom by closing the door and covering air entries and exits with cement, and then burnt charcoal. She left a suicide note. The deceased body was brought to Mortuary, Osmania General Hospital at 04:00 PM on 11/06/2022 by the I.O and requested for postmortem examination under section 174 CrPC.

KEYWORDS

Suicide, Charcoal, Sealed washroom, Suicide note.

1. INTRODUCTION:

- Carbon monoxide is a colorless, tasteless, non-irritative gas which is produced due to incomplete combustion of carbon. It is lighter than air and insoluble in water.
- In a closed environment, greater concentration is present at 1.5 to 2 meters above the ground. CO seeps through openings around doors or large cracks in walls.
- Sources: Furnaces, gas stoves, gasoline and CNG engines, forest fires, industrial emissions, biomass burning etc.,
- Action:
 - CO has 200-300 times greater affinity for hemoglobin than that of O_2 , it displaces O_2 from its combination with hemoglobin and forms a relatively stable compound called Carboxy-hemoglobin.
 - CO has 30 times more affinity to myoglobin than O_2 , which results in direct myocardial depression.
 - It acts as chemical asphyxiant and produces death due to anemic anoxia
 - It inhibits intra-cellular respiration by inhibiting the electron transport by blocking cytochrome A, oxidase and cytochrome P-450.
- Signs and Symptoms: Symptoms usually mimic the symptoms of influenza or illness caused by eating contaminated food, victims may not notice anything except headache, until they lapse into coma and die. Individuals with long term survival following significant exposure may have Parkinsonian syndrome.
- CO Automatism: Tendency of dying victim to wild, erratic swinging movements inside the room, disturbing the clothes and furniture which gives an impression of violent struggle.
- Death usually occurs when 80% of hemoglobin is saturated with CO, it can pass from maternal to fetal blood which results in intra-uterine death even though the mother survives (COHb concentrations 10-15% higher than maternal levels).

2. Case:

A 36 years old female who was running a boutique told her father that she will spend the night with her friends and went to her boutique on 10/06/2022 at around 4:45 PM but she did not respond to phone calls of her father that entire night and next day morning, so her father got worried and went to her boutique on 11/06/2022 at around 12:00PM and realised it is locked from inside, Then he forcefully opened the door and found her daughter dead in washroom sitting on a chair by closing the door and prevented air entry and exit with an evidence of burnt charcoal, she left a suicide note in washroom stating that she wants to end her life due to depression and work pressure. Case was filed under section 174 Crpc and the corpse was brought to Osmania General Hospital Mortuary and requisition for autopsy was submitted by the Investigation officer on 11/06/2022 03:30 PM and autopsy was conducted on the same day.

4. Post Mortem Examination:

- A moderately built female body of 36 years old with height 164cms with a black mole present over front of left side of chest, is supine, eyes partially open, conjunctiva congested, mouth closed, blood stained serous fluid oozing out from mouth and both nostrils, nail beds cyanosed.

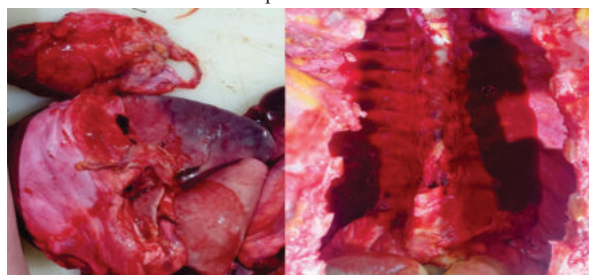
- Post Mortem changes: Cherry red coloured Post Mortem Lividity present over left side of the face, left hand, back of the body and back of both lower limbs.
- Rigor Mortis present all through the body.

Crime Scene Photo



Cherry Red colored postmortem Lividity over back of the body and back of both lower limbs

- No External ante mortem injuries present on the body.
- Internal examination: Brain is soft, congested, oedematous and cherry red in color, Heart and remaining viscera are congested and cherry red in color.
- Conducted routine bedside test to confirm the presence of carbon monoxide in the blood it came out to be positive.
- Chemical analysis of viscera: Revealed presence of carbon monoxide in the tissue samples and in blood.



Congested and Cherry red colored Viscera



Cherry Red Colored Blood.

5. DISCUSSION:

- a) Globally over 400 people are dying every year due to Carbon monoxide poisoning, most of them are above 65 years old.
- b) Postmortem Appearance: Cherry red discoloration of skin, mucus membranes, conjunctivae, nail beds, hypostasis, blood, internal organs and other tissues seen in 15-20% cases. This color will not be changed by embalming and changes to dark green then to brown with onset of decomposition. Lungs show congestion, pulmonary oedema and broncho pneumonic consolidation may develop. Brain shows punctiform and ring-shaped hemorrhages in the white matter with widespread oedema, Blistering of skin of dependent areas may be seen due to cutaneous edema.
- c) The Circumstances of Poisoning: "In India suicide by CO is very rare"
Accidental is very common
Homicide is usually uncommon unless the victims are adults incapacitated by drink, drugs, disease or they are children.
- d) Failure to detect CO: CO persists for many weeks after death and can be detected even after putrefaction, embalming and prolonged burial.

In cases where victim is shifted to CO free atmosphere and sufficient breathing occurred to clear the blood of COHb, but the victim may die because of irreversible brain damage, CO may not be detected.

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