

Diagnosis of Poisoning

- **In the Living:**
- No single symptom and no definite group of symptoms .
- A detailed clinical history is of great importance
- A case of poisoning should be suspected if the following things are observed:
- Symptoms appearing suddenly in an otherwise healthy individual
- Symptoms appearing within a short period after food or drink
- In a group or gathering, if similar symptoms are seen in all the individuals after intake of food or drink.

- The following group of symptoms are suggestive of poisoning:
- Sudden onset of abdominal pain, nausea, vomiting, diarrhea and collapse (Arsenic)
- Sudden onset of coma with constriction of pupils (Organo- phosphates)
- Sudden onset of convulsions
- Sudden onset of delirium with dilated pupils. (Datura)
- Paralysis of LMN type (Strychnine)
- Jaundice and hepato-cellular failure (CCl₄)
- Oliguria with proteinuria and he
- In these cases, collect:
- Stomach washings (entire)
- Urine (as much as possible)
- 10ml of Blood with NaF

- **In the Dead:**

- First, collect all the relevant information from Inquest report and also from the relatives
- Postmortem examination may show:
- External findings:
 - STAINS on clothes, marks of vomit or poison
 - COLOR CHANGES on affected skin and mucous membrane. (black color in H_2SO_4 & HCl , brown in Nitric acid)
 - PM STAINING may be Dark brown/yellow in Phosphorus, Cherry red in CO , Chocolate color in Nitrates, Nitrobenzene etc.
 - ODOUR from nose and mouth may be GARLIC like (P, Arsine gas, Arsenic), SWEETISH (Ethanol, Chloroform), ACRID (Paraldehyde, Chloral hydrate), ROTTEN EGG (H_2S , Mercaptans)

- INJECTION MARKS may be detected which may suggest route of administration.
- SKIN may show HYPERKERATOSIS (Chr. Arsenic poisoning), JAUNDICE (P, $KClO_4$).
- VIOLENCE MARKS such as bruise or other injuries if seen, suggests mode of death from cause other than poisoning.
- Internal Findings:
- SMELL: Peculiar smell seen in Cyanide, Alcohol, Phenol, Chloroform and Camphor poisoning
- MOUTH & THROAT: To be examined thoroughly for evidence of corrosion and inflammation or staining
- ESOPHAGUS: Marked softening seen in Corrosive alkalis.

- UPPER RESPIRATORY TRACT:
- May show evidence of volatile poisons
- STOMACH: May show hyperemia, color changes, softening, ulcers, perforation, etc.
- All the contents should be emptied in a jar with NaCl and the stomach preserved for chemical analysis.
- DUODENUM/INTESTINE: Ulceration beyond pylorus points to natural disease. Characteristic changes are seen in Hg poisoning. Normal GI tract rules out poisoning by Corrosives, Phenols, Hg and Arsenic compounds
- LIVER: Phosphorus, Chloroform, TNT, CCl₄, etc leads to Necrosis of liver. Fatty liver is seen in case of As, CCl₄, Mushroom poisoning, P₄, etc.
- RESPIRATORY SYSTEM: Corrosive poisons leads to glottic edema and congestion.

- **KIDNEYS:** Metallic poisons, Cantharidin poison leads to degenerative changes. PCT necrosis is seen with HgCl₂, Phenols, Lysol, CCl₄ poisoning
- **HEART:** Subendocardial hemorrhages in Left Ventricle are seen in Acute Arsenic poisoning
- **BLADDER / VAGINA / UTERUS:** Should be specially examined in cases of Criminal abortion

Chemical Analysis & Rules

- ❖ Organs removed should be kept in clean container and contamination prevented
- ❖ Specimens of blood, urine, bile, etc. should be kept in glass container
- ❖ Specimen of choice for poison detection is Blood

- Urine is ideal choice for direct spot test in death due to delayed poisoning. It is also the only specimen to show poisonous substance in chronic poisoning death
- In advanced decomposition, thigh muscle may help in detection of poison
- It is important to keep Liver / Kidney separately from Alimentary canal contents.