## DIAGNOSIS OF POISONING:

Diagnosis of poisoning is often difficult and has to be made on the available evidences. In many cases, little or no toxicity occurs and the patient, parents or relatives are reassured. Sometimes, the history may not be available or unreliable. Many cases of poisoning present vague symptoms and in some fatal acute poisoning, symptoms may be delayed for many hours or days even e.g. the symptoms in ethylene glycol may be delayed by 6 hours; metal vapours- 8 hours; methanol- 48 hours; paracetamol-36 hours; paraquate-48 hours; salicylates-12 hours; thallium-4 days; arsine and stibine-24 hrs. Some poisons develop deceptive symptoms e.g. gastro-intestinal type of arsenical poisoning may be mistaken for symptoms of cholera or food poisoning. Hence, a working diagnosis has to be made based on clinical features and laboratory investigations. The articles or the containers recovered from the scene of crime or the possession of the victim may provide help in case of suspected poisoning when the diagnosis is not immediately apparent. There are several symptom patterns which are typical for different types of poisoning and can be useful guide to the nature of poison, the laboratory tests needed and the treatment required. The list given below is illustrative and further advice may be required in difficult cases. The examinations should also include a search for signs of trauma and systemic disease because many organic illnesses enter into the differential diagnosis of poisoning. The symptoms, clinical examinations and the patterns of poisoning by some commonly used drugs and poisons are given below which are essential in assessing the patient and may help to identify the agent and severity of the problem.

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| ***(A) Symptoms*** | ***Poisons commonly involved*** |
| Vomiting | Irritant poisons like arsenic acids, alkalies excess of liquor and some metallic salts. |
| Diarrhoea | Usually poisons causing vomiting also cause diarrhoea. |
| Cramps | Metallic poisons like arsenic, lead, antimony, mercury etc. |
| Delirium | Dhatura, cannabis drugs, alcohol, atropine, hyoscine, LSD etc. |
| Convulsions | Strychnine, nicotine, cyanides, tricyclic antidepressants, phenothiazines, carbonmonoxide, ethyleneglycol, opioids, organophosphate insecticides, salicylates. |
| Paralysis | Lithium, amphetamines, lead, arsenic, aconite, snake venom etc. |
| Coma | Barbiturates, carbon monoxide, chloroform, trichloro- ethanol, opioids and excess of liquors. |
| ***(B) Clinical Findings*** | ***Poisons commonly involved*** |
| Skin color Cherry Pink  Flushed pink skin  Jaundice Central cyanosis | Carbon monoxide  Alcohol, cocaine, cyanide and anti-cholinergic agents  Hepatotoxic agents like paracetamol  A sign of hypoxia but methaemoglobinaemia also causes similar colour. |
| Skin changes Cutaneous bullae  Sweating | Barbiturates, glutethimide, sedative  overdoses, tricyclic antidepressants and carbon monoxide.  Organic conditions like hypoglycaemia,  myocardial infarction and pyrexia due to infarctions and poisoning by salicylates, organo phosphates, or monoamine oxidase inhibitors. |
| Pupils Dilation  Constriction | Pupils dilate in severe hypoxia and in hypothermia. Drugs such as tricyclic antidepressants also cause dilation. Glutethimide and monoamine oxidase inhibitors produce wide dilation.  Opioids typically cause pin point pupils. Organophosphate insecticides and trichloroethanol poisoning cause very small pupils. In barbiturate poisoning the pupils may vary in size at times being  small, at others dilated. |
| Body temperature Hypothermia  Hyperthermia | Comatose condition for sometime may cause hypothermia. Sedative and hypnotic drugs, trichloroethanol, ethanol and opioids cause hypothermia.  Hyperthermia may be caused by heat stroke and meningitis and poisoning by anti-cholinergic agents, tricyclic anti-depressants, monoamineoxidase, inhibitors, carbonmonoxide, dhatura, phenols and salicylates. |
| Breath odour | Alcohol, acetone (diabetic ketoacidosis and starvation) solvents such as toluene, trichloroethane, ether, turpentine, petrol, kerosene, cyanide and methyl salicylate. |
| Appearance of  blood, urine and vomit | Red venous blood may suggest cyanide or carbonmonoxide poisoning.  Brown arterial or venous blood may suggest methaemoglobinaemia.  Vomit or gastric lavage containing blood may suggest repeated vomiting, corrosives, paraquat, coumarin, anticoagulant, irritants, iron and non-steroidal anti- inflammatory drugs.  Many drugs turn urine black e.g. metronidazole.  Urine may be cloudy or red or brown due to haematuria, haemoglobinuria or myoglobinuria. |
| Blood pressure Hypotension  Hypertension | Almost all sedatives, hypnotics, dehydration, lengthy coma, vomiting and sweating may cause hypotension  Amphetamines, cocaine, phencyclidine, sympathometics and anti-cholinergic agents. |
| Cardiac arrhythmias | Changes in heart rate or rhythm may be caused by beta blocking drugs, organophosphates, theophylline, tricyclic antidepressants, sympathometics, barbiturates  etc. |
| Pulmonary oedema | Petroleum products, organophosphates, ethyleneglycol, irritant gases (metal vapour), salicylates, opioids etc. |
| Rhabdomyolitis | Patient lying in coma for a long time on hard surface may develop it due to pressure necrosis of muscle, which may lead to renal failure. The agents mostly |
|  | responsible for the same are barbiturates, opioids, ethanol and carbon monoxide. Rhabdomyolysis can also occur after prolonged and severe muscle spasm, due to poisoning by strychnine, phencyclidine and monoamine oxidase inhibitors. |
| **(C) Pattern** | **Poisons commonly involved** |
| Coma, Hypotension, Flaccidity. | Barbiturates, benzodiazepines, glutethimide, trichloro- ethanol, ethanol, opiods etc. |
| Coma, hypertension, techycardia, dilated pupils. | Tricyclic antidepressants, anti-cholinergic agents, phenothiazines. |
| Malaise, restlessness, nausea, weakness. | Carbon monoxide, solvents, insecticides, lead, mercury, arsenic. |
| Restlessness, hypertonia, hyperreflexia, pyrexia. | Monoamine oxidase inhibitors, anti-cholinergic agents, strychnine, phencyclidine, amphetamines. |
| Behavioural Disturbances | Psychotropic drugs, anticholinergic drugs, corticosteroides, solvent abuse, psilocybin- mushrooms. |
| Burns in mouth, disphagia, abdominal pain, distension. | Corrosives, caustics, paraquat. |
| Renal failure | Paracetamol, mercurial compound, acids (phosphoric, oxalic, formic), phenols, arsine, stibine, lead. |
| Jaundice, hepatic failure. | Paracetamol, carbon tetrachloride, phosphorous, organic lead. |

## POST MORTEM FINDINGS IN POISONING:

* A peculiar smell on opening the body: The substance detectable by their smell are alcohol, cyanide, carbolic acid, petroleum products, camphor, nicotine, opium, paraldehyde, phosphorus insecticides, pesticides etc.
* Presence of any foreign material in the form of powder, capsules, tablets, leaves or seeds in the stomach.
* Irritation, ulceration and perforation or discoloration and change in color or softening of the mucous membrane of the stomach.
* Laryngeal oedema commonly in the death is due to alcohol and barbiturates**.**
* Acute lung congestion and oedema**.**
* Acute swelling of brain with or without a pressure cone**.**
* Distended urinary bladder**.**
* Intravascular sickling.
* Negative evidence such as no trauma or no sign of disease in any organ to account for the cause of death.
* Body is highly decomposed.
* Dilation or contraction of pupils.