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A SYSTEMIC REVIEW OF GENRRAL PRINCIPLES OF MANAGEMENT IN CASE OF POISONING

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Abstract:
In management of poisoning the patient should be shifted to I.C.U. and where require ABCD of resuscitation. It required (A) Airway (B) Breathing(C) Circulation (D) Drugs (E) Evaluation.
Then requires removal of Poison from body. ABCDE method was first used by Scan din a vision physicians in 1940 used in barbiturate poisoning.
Another thing which is done is decontamination. Copious saline levage, skin-copious water, then soap and water. G.I.T. vomiting, levage, dextrose and dialysis.
Lastly administration of antidotes.

Keywords: Resuscitation, saline levage, Antidote.

Introduction:-
The understanding of poisons is existing from ancient time. It is defined as any substance which were ingested, inhaled or absorbed, developed; within the body may cause injury to vital area. Treatment of poisoning. Follows broad principles.(1) Resuscitation (2) removal of unabsorbed poison.(3)Removal of absorbed poison.(4)Antidote(5)symptomatic treatment(6)follow up.

AIM AND OBJECTIVES:
The main aim was to conduct systemic review of literature of different book about poision, diagnosis and management and follow up. Role of regional poison information centers in poisoning.

MATERIAL AND METHODS:
Search of the literature were done to evaluate poisoning and management in different book of forensic medicine and text book of medicine.

REVIEW OF LITERATURE
HISTORY OF TOXICOLOGY
A. Ancient period B.Medieval period C.Modern period.
A. ANCIENT PERIOD:
(1) According to tradition of India the origin of poisons belong to Lord Brahma. Once Brahma was in danger by a devil, called kaitabha and made poison to finish him He was successful in destroying him. But its evil spreads over the universe. Than Brahma had to divide it all over, the vegetable, animal and minerals.
He also created antidote.

(2)Halahal-halhal or kalakuta is the most vicious and venomous poison of the world. It was found from the ocean when gods and assures made it in Sam under man than to get amrit (The liquid of immortality).As both party could not bear heat and poisonous fumes, both devas and assures begun to collapse, Both parties prayed to Lord Shiva for help, Shiva drank it. His wife parvati stopped it in his throat thus named Shiva as Visakanta.The poison made his throat blue hence called Nilkantha then Shiva started getting restless. He was having Chandra dev (moon) on his head and was offered Ganga water (as antidote).Additional lord Shiva consumed marijuana as antidote. Lord created cannabis from his own body.

3. KASHYAPA a physician who was wor king in the time a Buddha (6^{th} centaury B.C) He was beatings snake bite, king parik shit had a curse that he would die of snake bite but kashyapas had taken it upon himself to treat him.

(4)Substrata The renound surgeon of India (800B.C) defined agadatantra (Toxicology).
It is concerned with diagnosis and treatment of any victim bites by poisonous Insects or venomous reptiles or any compound poison.

(5) Kautilya The Arthashastra of Kautilya (4^{th} B.C) deals with toxicology and has the description of money Ayurveda herbs, metals and poisonous substances.

(6) Chandra gupta Maurya (320-298B.C) during his administration, there was procedure to select beautiful girls and given poison in small doses until they grow up. These were called vishakanyan.

Legal theory today could be that these girls were infected with incurable diseases .e.g. Syphilis. Thus Victimes get infected with syphilis and advised to have poisonous drugs (e.g. mercury) for whole life. The victim died of syphilis or by poision. Another theory could be that vishakanya seduced their targets. of sex and given them poisoned alcohol (e.g. methanol)

Rest of the word;-
(a) EGYPT
Menls (3 millenniums before B.C) one of the first pharaohs had cultivated and studied poisonous and medicinal plant. He also got knowledge of animal, mineral and Vegetable poison.
Embers papyrus:-(1550Bc) an Egyptian medical papyrus of herbal knowledge, many containing and identified poisons for e.g. hemlok, aconite and opium.

(b) Greeke:-Greek history shows a considerable knowledge of poisions. Hectate had knowledge about aconite Discords(AD.40-90) Classified poison.
(1) Animal poisons.
(ii) plant poisons.
(iii)Mineral poisons(As, mercury, copper).poisons were used by Greeks as means of capital punishment.

(c) Rome (2nd century B.C.) Roman senate executed 190 lady prisoners. parisatis (400 B.C.) pension Queen her daughter in Law by poisoning the knife used for meat for her dinner.

(B).Medieval period

.In Venice (Italian) from 1310to1797 there was council of tea who had meeting regularly to arrange poisoning for the state and their records are noted.

.Borgias, Spanish, living in Italy was expert in poisoning. They had special ring. with tiny poisoned spike. Anyone shaking hands would be punctured and killed..Pope Alexander (1339-1410) had also died suddenly by poison by cardinal Baldassare cossa, a successor.

(C) Modern period

.India

Arsenic was a ingredient in the mixture of alphrodisiacus and love philter which in turn increase sexual desire.

MANAGEMENT

A. Airway

(1)Assessment (1) protective reflex (ii) monitor-oxygen saturation percentage.

(ii)If improper (1) clean airway (seretion & Vornitus) (ii) Endo tracheal in tubation (iii) If necessary tracheotomy.

(B).Breathing.

(1)Assessment-(1) total volume (ii) Arterial blood gas analysis.

(ii) Glas gow coma scale

(a) 1.No eye opening.
2. Eye opening at pain.
3. Eye opening to speech.
4. Eye opening spontaneously.

(b) Best verbal response.

1. No verbal response.

2. Moaning.

3. Confused & Dis oriented.

(c) **Best motor response** 1. No motor response.
2. Decelerate rigidity. 3. Injury to brain stem.

Interpretation

Poisoning is classified.
Serve with CCS<8-Coma.
Moderate-CCS 9-12.
Minior-CCS>13.
Perform capnography (partial pressure of Co2 or End tidalCO2 Conc.ETCO2.If in a deqreate supplemental O2 Therapy. Maintain I.V.at 10-15ml/kg.

(c) Circulation:-

Assessment checks blood pressure, pulse rate, 12 lead E.C.G. Continuous vital monitoring. If disturbance in vital (1) Secure I.V. Line Intracath (2) antidysrrhythmic drug (3) Vasoprssure agent (4) If reqreid atropine, NaHCO3, Magnesium (5) finally C.P.R.

Depression A CNS:-

(1) Unconscious patient should be turned to one side (just to prevent tongue obstruction, allows, fluid to gravitate out.

E. Evaluation of patient:-
It should be done when the patient is stabilized.
(1) Respiratory sound- Auscultate, specially, after I.V.fluid.Help to diagnose, pulmonary oedema, acute lung injury and aspiration pneumonia.
(2)Heart sounds(a) murmers (b) Dysrhythmia suggesting overdose of cardiac poisons(e.g. digetalis, Bs-adrenergic antagonist).
(3) per abdominal examination (1) Enlarged liver it indicate hepatotoxic poisons,(chr. alcoholism.(2) Bowel sounds to diagnose cholinergic/ anticholenergic toxicity.
(4)Examination of extremities;-E.C.G in cases of toxic gases.

III-Removal of unabsorbed poison
A-Inhaled poisons (e.g., co, H2S, CL2 etc)
(1) Fresh air
(2) Air passage- clear passage by mucus.
(3) Endo tracheal insulation.
(4) Oxygen inhalation (6-8L/minute).
(5) If branchosparm.
(1) Aminophyllin 250-500mg slow I.V.
(II) In haled B-agonist.
(III) Parenteral corticosteroid

(6) Diuretics-if pulmonary edema is persisting.
(B) Infected poisons
In case of infected poison (insect and snake bite, scorpion stings, drug over dose.
(1) .Reassurance-calm the patient
(2) ABCDE-monitoring patent.
(3) Treat shock.
(4) Allergies-treat anaphylactic reaction.
(5) Local vasoconstrictor-adrenaline injection around infected area.
(6) Tight ligature above infection, wound excision sucking out poison.

(C) Contract poisons
1. Eye-Irrigate c-water, Remove contact lenses.
2. Skin Remove contaminated clothing, and wash exposed area with soap & water. Remove jewelers.

(D) Ingested poisons.
Emesis is obsolete. It is be used when nothing is available.

Where it is used:-
-Difficulty in obtaining or using stomach tube.
-When vomiting centre is functional.
-During the process, patient should set or lying on his side.
- Mechanically by tickling throat, by fingers or spoon handle.
- Drugs can be given I Peace (Root of Small Shrub) 30ml used c several glass of water.
-Emetine, central stimulation of Vomiting centre can be used.

It is also stimulate sensory receipts of G.I.T.

It is no mere recommended because of the reason-(1) No evidence of clinical beneficial (ii) poison removed is variable (iii) Hamper other method(iv) adverse effect-cardio toxicity (v) It cannot be used in unconscious patient.

Contra indication
-Same as those of gastric levage (e.g. hydrocarbon).
-Active Vomiting.
-Coma stage poisons inducing seizures.
-Tricycle antidepressant, debilitied and elderly patients.

Adverse effect
As partition, Esophageal rupture, coma, intractable vomiting, seizures, bleeding from tear in the mucosa at the esophageal and stomach function.

2. Gastric Lavage.
Procedure
Ewald,s tube(1845-1915),a German gastro-entero logest.A tube is 1cm an diameter and 150cm length with funnel attached at one end while other end is round. They have got one section bulb at mid point, which is used to pump out stomach contents. It is provided with wooden month gag. Position of patient is kept on his left side with head hanging over the edge of the bed and face down (Trendelenburg position).
(2) Tube inside(1) dentures should be removed .and wooden mouth gag is placed in between teeth. Tongue is depressed with use of tongue depressor. Tube is parsed up to stomach (50cm mark).
(3) Tube in stomach:- absence of coughing.
(4) Stomach Lavaging
(1) Sample should preserve (ii) pass about 250ml of water and Lower the stomach below level. Then put N-saline 50-100ml in children and up to 200ml in adult and levaged is repeatedly, stop lavegning when return fluid is clear & odourerles.KMno4 levage should be done and stopped when the returning fluid has pinkColour.

Contraindication
Absolute-corrosive. Sharp and pointed material.

Relative:- cardiac arrhythmias, children, may be done with Ryle tube. Coma. Convulsort poisoning esophageal varies. Hemorrohagic diathesis. Hy pothermia. kerosene poisoning, Advanced pregnancy. Recent surgery, volatile poisons.

Complication:- Aspiration pneumonia 2.Brady-cardia B.Cardiac arrhythmia 4.E.C.G.Changes 5.epistaxis.6.hyponatremia 7.hypoxia 8.laryngospasm 9.perforation.10.water intoxication.

Cathartics:-
(1) Poison absorbable by AC.
(II) Cathartics used mgso4 6% solution sorbitol.

Whole Bowel irrigation:-
It flushes out the entire G.I.T.with in hours 6 pars initially a solution of Nacl, kcl and NaHco3 was used but it was absorbed by body. Now days. Polyethylene glycol is used.

Procedure;
It involves rapid administration of large amount of poly ethylene glycol. Electrolyte levage solution by a Ryle's tube while the patent set in toilet seat, about 500ml to 2000ml in adults. Procedure is done till rectal effluent is clear.

Indication (1) Those patient in gested toxic dosen of medicine. (2) Toxic intake of sustained release of drugs.

Contraindication(1)Bowel perforation(2)Bowel obstruction(3) hemorrhagic bowel(4) gleus(5) compensated airway(6) vital instability.

(iv)Removal of absorbed poison form the body
(A) Common diaphoretic agents are (1) Alcohol (ii) Antipyretics (iii) Hot drinks like coffee, milk (iv) pilocarpine nitrate.

(B)Increased renal excretion:-To induce dieresis large amounts of fluid are given and then injection diuretics

Side effect. Can cause oedema of pulmonary and cerebral.

(C)Urine alkalinization
Urine alkalinization is treatment by which poison elimination of giving I.V Sodium. Bicarbonate to maintain Urine ph>7.5.
The basic principal behind this that uncharged ion can freely pass by biological membrane while charged ion cannot pass.
(2) It poison molecule is in unchanged from the filter of molecule nglimeruli, would come back in the system, those molecule in charged form would remain in Tubules. As the ph of urine changes the ratio between ionized and unionized changes. As acidic drug would be ionized more in alkaline urine and vice-verra.Drugs/poisons in which urine alkalinization is useful (1) Barbiturates (2) salicylates (3) Dichlorophenoxyacetic Acid (4) mecopop (5) chloropropamide (6) fluoride (7) methotrexate (8) BAL therapy-just because BAL-meta complex dissociates in a acidic urine The achievement of alkalinezation is done by NaHCO3-1-2m e.g./kg every 3-4 hr.which is estimated by ABG.

CONTRAINDICATION
C.H...F Renal failure, cerebral oedema.

(D)Urine Acidification:-The process used in-
1. Methadone 2.Amphetamine 3.phencyclidene it is achivend by giving I.V. ascorbic acid or ammonium chloride 1-2g every 4-6hr.
E. Hemodialysis:-It is method for removing metabolic wasters and free water from blood when the kidneys are involved in renal failure; it is useful in Barbiturates, boric acid, Bromides, lithium, alcohols, and salicylates, Strychnine, and Theophylline.
F. Peritoneal dialysis:-patent, s peritoneum is used as a membrane across in which toxin in the blood are exchanged. It is 25% of haemodialysis.

Poisons elective
Alcohols, barturate, bromides, chloral hydrates lithium, mercury, salicylates, sodium chloride and theophylline.

(V) Administration of antidotes:-According to the International programme on

Chemical safety it is defined as-It is a therapeutic substance used to counteract the toxic effect of specified xenobiotic.

Classification

1. based on site of action:-(1)when they are in G.I.T (2) when they are in blood(iii) when they are acting on target cells-Mechanical antidotes, chemical antidotes. Chelating agenls, semological antidotes, physiological or pharmacological antidotes.

A. Mechanical anti dotes

It works mechanically on poisons inside the G.I.T their classification.

(1) Absorbent:-which absorb poisons on their surface (e.g. charcoal)

(ii) Demulcents:-prevent the absorption of poison by making covering on stomach wall (milk, ghee, oil, bulter.)

(iii)Diluents

They make dilute the poison making them in effective (e.g..plain water, bulky food

Mechanism of Action(1)Absorb toxic substances thus hamper G.I .absorption(ii) for specific drugs its clearance by inter faring with electrophonic recycling. Lowering .interaluminal concentration of poison in G.I.T.Activated charcoal reates a concentration gradient between the blood and bowel fluid it increases the flow of poison from the blood into G.I.T.it is called get dialysis (IV) Addition a Sorbitoe result in hyperosmatic laxative that lead to catharsis.

Side effect:-Block tongue and stooks, constipation, Intestinal obstruction, vomiting, diarrhea, correal abrasions, Aspiration pheumonites.

Contraindication:-Intestinal obstruction, perforation. Hemorrhagic perforation.

(B)Demulcents:-They terma protective film over gastric mucosa thus avoid entering poison to systemic circulation.

(C) Diluents:-just to dilute the poison and reduce its effective's e.g. boiled Mashed potato, boiled rice boiled Vegetables', Halwa.

C**hemical antidotes:-**They neutralize the poisons chemically within G.I.T.

(i) Acids Neutralize alkalis, weak solution canned fruit juice, lemon juice, vinegar.

(ii) Albumin It is found in white portion of egg. Used in mercuric chloride&cu poisoning.

(iii) Alkalis It neutralize acids.Alkalene hydroxides (Mag.hydroxide, calcium hydroxide hydroxide) called hydrated time.

(iv) Common salt:-It is given for silver nitrate poisoning.

(v) Cuso4-was given for phosphorus poisoning.

(vi) Dicobalt edentate-combine with cyanide.

(vii) Hydrated ferric oxide-As poisoning.

(viii) Lugal'sgodene-Alkaloids poisoning.

(ix) KMno4.KMno4 in15000conc. is strong oxidizing agent useful in Atropine, Barbie rate, and cyanide hydrocyanic acide, opium, p,and strychnine?

(b) Tannic acid:-4% solution (strong tea) ppt a conite, apomerphine,(cinchona chona, cocaine, metal (Al, co, cu, pb, hg, Ni, Ag, Zn)nicotine, and pilocarpine.

(c) Chelating agents:-

They are chemicals, that form soluble complex moleculs (chelats) with ion of metals, and thus they were in active so that they cannot react with other elements.

Salient features:-(i) They are able to complete with natural chelators(ii) complexes formed formed should be non-toxic (iii) Distribution is same that of essential metals(iv)They are soluble in water

and eipid(v) they are least toxic(vi) Good-absorption form G.S.T.(VIII) There should be rapid elimination of toxin.

BAL (British anti Leuriste, Dimercaprole).
IT was developed during word ward II BAL which combines with As rendering it in effective.
Dose-a available as 3ml ampoules containing 100my/me of BAL given I.M.
It is used in Mercury, Arsenic and Lead.
Precaution:-Alkalization of the urine may cause deficiency of essential metals.
BAL analogues:-
(a)DMSA :-(2-3D-Mercapto succinic acid

EDTA :-(Calcium disodium Edetate).
It is capable of chelating metals (e.g. cd, co, cu, Fe, Pb, hg, Ni) but it is now day used for lead to form soluble, stable, no ionized compound which is excreted in urine.
It is available in 5ml ampoule have 200mg CaNa2EDTA perml.I.M.is Pariful, so given by I.V.Perfurion.5% in 24 hr{in 5% dextrose or 9% Nacl}dose-1500mg/m2/d in adult.

Contraindication:-Anuria, hepatitis, Renal diseases.
Side-effect-Lead encephalopathy, cerebral edema.

D-Penicellamine(DPA)
Indication (cu, Pb, Hg dose-30mg/kg orally for 7days.
Deferroxamine:-It is bacterial siderphore It is used in iron poisoning, available 500mg or 2gm sterile hyphilized powede.5ml water is added, result in100mg/ml solution. Dose-oral 5-10g/day,I.M/gm initially followed by 5mg QID in 24hr

PAM:-Methyl sulfate Dose 1-2gm in 100 ml of .9%Nacl given by I.V. over 15-30mt.
Repeated in 1hr.if muscle weakner.
Adverse elfect:-Temporary worsening of cholinergic manifestation. It is given until the patient is clinically well and not requiring atropine.
Atropine-Dose 2.5mg I.V.every 5-10min utill complet atropinization (dry flushed skin, pulse140/ml.pupil-dilatation)

Serological antidotes
(1) Antisnake venon
(ii)Antispider venon
(iii) Immunotherapy.

Adequate follow up
(i) It is important to treat complication**.**
(ii)In suicidal cases- psychiatric consultation.

CONCLUSION:-
Duties of a A. Medical practioner in case of Suspected poisoning:
A Medical
It includes treatment of Patient If pt is serious medical duties will take procedures over legal.

B. Legal
(i) Information to police
It should be done in all cases of poisoning weather it is suicidal, Homicidal or accidental.

(ii) At the hospital:-Routine body fluid, gastric levage, blood, sliva, sweat, urine, vomit, faces, milk each must be preserved and handed over to police.

Clothes:-soiled c vomit, faces should be sealed and handed. as to police.
Unsoiled cloths;-underwear and other garment should also be sealed.

(3) Arrangement for dying declaration:-
It doctor teals that the patent may not live he must arrange for dying declaration.

Medico legal aspects of poisons:-
(1) 5.85 IPC-Criminal act done under in voluntary intoxication.eg x-administers datura to Without his knowledge x-murders z under the influence of denture-y is not responsible.
(2) 586 IPC-criminal act done under voluntary intoxication-after intoxication intention to do so cannot be presumed.
(3) S274 IPC-adulteration of drug.
(4) S276 IPC-Sale of drug as a different drug.
(5) S278 IPC Making atmosp

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