

Barbiturate Poisoning

A Study of Four Cases

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SUICIDE is the third ranked cause of death in individuals—between 15-24 years. More suicides are committed than are reported. Suicidal poisoning is becoming a social problem and as resulting in growing frustrations and tensions in young people of the present day world. It looks an easy way of escapism from the reality. Drugs being easily available especially in our (J & K) State one resorts to such measures without any inhibitions or problems, and also because of the illiteracy about the toxic doses of the drugs.

The patients usually come in a state of drug overdose, rather than real poisoning. Women outnumber 3:1 in attempted suicide, but men succeed in killing themselves in the ratio of 3:1 to women. Barbiturate intoxication is the most common cause of drug induced coma. More than 75% of drug induced suicide deaths are as a result of barbiturate poisoning.

We are presenting four case reports of barbiturate poisoning, three of which were successfully managed, but one patient died because of aspiration pneumonitis. Three cases were suicidal in nature and one was accidental.

Case Report I

(A) A young man aged 28 years, a doctor by profession, came with the history of taking luminol; the number of tablets taken was not immediately known. He became stupefied with respiratory insufficiency, vitals were otherwise maintained. He was intubated, had respiratory arrest, was put on critical care ventilator on IPPR (Intermittent Positive Pressure Respiration). The patient continued to be on ventilator for 10 days.

Investigations

Barb level—52 mg/ml

X-ray chest—clear

Blood gas/analyses within normal values

On the 4th day he was tracheostomised and was weaned off from ventilator on the 10th day. His barbiturate level also came down and as the patient was being managed on the lines of Alkaline diuresis and he was weaned off successfully from ventilator and later on discharged after few days.

Case Report II

A young educated woman, aged 20 years, came with the history of taking barbiturate tablets as

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narrated by attendants. The patient was comatose with laboured breathing, cyanosed, pulse 100/mt, BP 90/60 mm, hg. pupils semidilated, sluggishly reacting chest full of coarse crepts.

Investigations

Drug level—72 mg/ml

X-ray chest—aspiration pneumonitis

Blood gases—Hypoxia, metabolic acidosis

Patient was intubated and put on ventilator with controlled respiration, rate 12/mt. Through ETT suction alongwith chest physiotherapy done. Acidosis corrected by giving Na HCO₃. The patient was on IPPR for 15 days. She was tracheostomised on the 10th day and later on weaned off from ventilator after putting her on I.M.V. (Intermittent Mandatory Ventilation). The patient was managed on alkaline diuresis.

Case Report III

25-year old married female, was referred from another hospital, intubated, being ventilated with an ambu bag having no peripheral pulses, pupils fixed and dilated, with the history of taking barbiturates, history narrated by attendants.

Investigations

Barb level—130 mg/ml

X-ray chest—Aspiration pneumonitis

Blood gases—Severe hypoxia Metabolic acidosis

The patient was put on critical care ventilator with controlled respiratory rate 12/mt patient responded to treatment, her pupils started reacting, but later on she succumbed to septicemia and died in the hospital.

Case Report IV

An interesting one, a three-year old cute boy, epileptic from birth, on treatment, with tab luminol and tab magetol. One sad morning the boy got up from his bed, and caught hold of the bottle of luminol from his bedside and took almost 20 tabs. By the time his mother became aware of it, it was too late. Patient was taken to a nearby hospital, where stomach wash was done and the patient was referred to our Institute in a state of respiratory depression. Patient was intubated with protex tube and put on ventilator (Ohio-Critical Care Ventilator).

Investigations

Barb level—82 mg/ml

X-ray chest—clear

Blood gases—within normal limits

Patient regained consciousness by the 6th day, extubations were tried, but because of persistent stridor (a harsh, high pitched respiration) and glottic oedema, one had to resort to tracheostomy. Tracheostomy was done which was closed later on. Patient was put on steroids also. The tracheostomy was closed subsequently and he showed marked improvement in his respiration (without any stridor).

Pharmacology

All barbiturates are weak organic acids. They bind to plasma proteins in varying degrees and are eliminated from the body by urinary excretion or liver metabolism.

Barbiturate intoxication produces depression of the cerebral and medullary centres, and has a direct action on the heart. Coma may develop breathing may be slow or rapid and shallow, cheyne stokes breathing also develop. Minute ventilation is depressed and hypoxemia and respiratory acidosis frequently develop. Pupils may constrict and react to light but later may dilate. Reflexes are depressed and correlated to the intensity of cerebral depressions. The therapeutic half life is 12 to 24 hours, hence the longer period of unconsciousness with long acting drugs like barbiturate.

Management

Management differs according to the condition of the patient.

When the patient is conscious, arousable, that is within four hours of ingestion of drug:

(a) *Position:* Place patient in right or left lateral position, it will prevent aspiration during vomiting and will facilitate patient airway. Gastric lavage should be performed in lateral position.

(b) *Determine* The nature of the drugs ingested.

(c) *Emetics:* Induction of emesis when the patient is easily arousable by giving salt water. Salt water helps as an emetic agent and thus helps in vomiting out of gastric contents.

(d) *Gastric lavage:* It should be only productive, if the drugs were ingested within previous four hours. Lavage is not recommended in an awake patient.

(e) *Activated charcoal:* Activated charcoal is a valuable drug absorbent and its use is safer than induced emesis or gastric lavage. Charcoal is effective not only in absorbing barbiturates but morphine alcohol and salicylic acid.

(f) *Blood Samples:* Arterial blood gases type and cross match, complete blood cell count, electrolytes creatinine blood urea nitrogen levels. Along with blood samples urine vomits and gastric contents are also sent for analysis.

(g) *Maintain Vital Signs:* Arterial blood pressure and central venous pressure catheters are inserted for constant monitoring, circulatory collapse is the major problem. Hypotension may be due to peripheral venous dilatation and pooling as well as decreasing circulating blood volume.

(h) To maintain fluid and electrolyte balance start I/V line.

II. Management in Case of Unconsciousness

Pulmonary management:

—Maintain the airway—airway endotracheal intubation

—Maintain tidal volume at 15 ml.

—Administer oxygen for respiratory depression unconsciousness, cyanosis, shock.

—To maintain tidal volume and in respiratory depression institute artificial respiration (Intermittent Positive Pressure Ventilation) with ventilator.

—Take arterial blood sample to measure acid base status and blood gases.

—Assess for central nervous system depression by assessing coma level.

Assessment of Coma Level by:

—Opening of eyes, in response to verbal command to pain or none.

—Best motor response (obeys commands).

Specific to local pain, general response to local pain, decerebrate or none.

—Pupillary reaction, brisk, sluggish, slight or none.

—Pupillary size normal, semidilated or fully on dilated each side.

Maintenance of Vital Signs:

Monitoring must be done frequently, arterial blood pressure, pulse central venous pressure temperature, urine output and level of consciousness.

Order X-ray Chest:

Pulmonary aspiration of gastric contents must always be suspected in the comatose. Patients after giving careful respiratory support avoiding too early weaning is required. Since prolonged blood levels of these agents may lead to late respiratory arrest the immediate requirement is to establish the level of consciousness.

Fluid and Electrolyte Balance:

I/V fluids are given according to the condition of the patient, aseptic technique should be applied, to prevent infection urinary catheter is inserted to record I/O chart of the patient and hourly measurement, renal function is good guide for fluid therapy.

Temperature Control:

Strict monitoring and control of temperature are of major importance in the treatment of drug intoxication, since hyperthermia can raise metabolic and O₂ consumption of body. Hypothermia on the other hand reduces metabolism and O₂ consumption. Rectal temperature should be observed frequently. Body temperature should be maintained at 37°.

Suction should be done to keep airway; patent tracheal aspiration of secretion should be done by

(Continued on Page 190)

Aspects of Care in Barbiturate Poisoning

(Continued from Page 174)

an atraumatic, smooth and aseptic technique. Before suction chest physiotherapy should be given to loosen thick secretion and deep lung inflation should be administered; catheter is introduced gently, while inserting it should be pinched to prevent injury, application of suction should never exceed 10 seconds. To break up thick secretion 2-5 ml of sterile normal saline should be instilled into endotracheal tube and forceful suction done.

Skin Care:

Changing of side 2 hourly for prevention of bed sore, back care should be repeated 2 hrly.

Eye Care:

Since patients can not close their eyes to prevent corneal ulcer exposure eyedrops should be instilled and one should cover the eyes with sterile pad.

Prevent Circulatory Failures:

By correcting hypovolemic state with intravenous infusion of plasma or crystalloid fluids. C.V.P. and pulmonary wedge pressure should be measured; intake output charge should be maintained to prevent fluid overload with resulting pulmonary oedema.

Haemodialysis and Peritoneal Dialysis:

These are not instituted unless renal failure develops. Barbiturate clearance with dialysis is not very effective. Indications for dialysis are considered similarly in poisoned and non-poisoned patients.

Convulsions

Poisoning may be complicated by convulsions either as a direct effect of the toxin on the CNS or secondary to hypoxia. Prophylactic anticonvulsant therapy may be started. To prevent biting of tube an airway should be put in. Along with anticonvulsant therapy neuromuscular blocking drugs may be required in order to facilitate the artificial ventilation of the patient.

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Breast is Best

(Continued from Page 180)

Breast feeding helps parents to space their children.

Hazards of Bottle Feeding

Milk is easily contaminated with germs from dirty bottles, rubber teats, spoons, water or hand. This hazard is common in homes where there is no running water supply and where there is little fuel or time for sterilising the feeding bottles and teats.

Except for breast milk no other milk has any agents that can protect the child from infection.

Milk goes bad if it is not used quickly. This happens much more quickly in hot climates.

Cow's milk and powdered milks are often diluted too much. This is because they cost so much, if they are diluted the children do not get adequate nourishment and will not grow.

The rubber teat of the bottle may have too small

or too large a hole. If the hole is too small the child may struggle to get the milk and swallow a lot of air but not enough milk. Too large a hole may cause rapid feeding and sometimes vomiting.

Thus the above points make it amply clear that there is no substitute to mother's milk. As such we are constrained to promulgate that 'Breast is Best'.

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