

A prospective observational study and survival pattern of organo phosphorous poisoning patients with intensive care treatment in a tertiary care hospital

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ABSTRACT

Background: Organophosphate poisoning is poisoning due to organophosphates (OP's), used in insecticides, medications and nerve agents. It occurs mostly during suicide attempts in the farming areas, developing world and less by accident. The study is to evaluate the drugs used, respiratory conditions, complications occurred during course of treatment.

Methods: This was a prospective observational study conducted for 9 months in a tertiary care hospital. The study was conducted in a 500 bedded tertiary care hospital in an intensive care unit. The study was conducted for nine months (September 2016 - May 2017).

Results: A total of 234 patients who had consumed OPP with known and unknown agents were admitted in the emergency department. Out of which 180 males and 54 females.

Conclusions: This study concluded that the patients consumed poison is mainly due to mental disturbances and financial problems. The stress and burden on the life will shows the effect after consumption, the maximum people suffer with respiratory problems due to poison consumption. If the government should take the measures to avoid consumption of poison and availability of poison to the public may overcome the complications and reduce the deaths due to poison.

Keywords: Anticholinergics, Antidote, Bronchospasm, Family disharmony, Op poisoning, Tracheostomy

INTRODUCTION

Poisoning is one of the major causes of the hospitalization through the emergency department and is a major public health problem.¹ A case of poison is also defined as the overdose of drugs. Since 1945 some 15000 individual compounds and more than 35000 different formulations have come into use as pesticide.^{2,3} The wide spread uses of agents are particularly the organophosphates; physicians

have been called on to diagnose and manage a large number of poisoning cases.^{4,5} The poison can be consumed as a method of assassination, murdered, suicide and execution.⁶ Poison lethal effect can be combined with its allegedly magical effects organo phosphorous compound is an important medical emergency in which if early treatment is not received mortality is high.⁷ The leading cause of death is due to respiratory failure its results from combination of respiratory muscle weakness, central

respiratory depression, increased bronchial secretion, bronchospasm, pulmonary edema. Hence the study was carried with the aim to identify factors related to outcomes and to suggest strategy to reduce associated mortality and morbidity.^{8,9}

METHODS

The study was prospective observational study conducted in tertiary care hospital. The study was done in the patients of intensive care unit and acute medical care unit.

The study was done by collecting information using patient case sheets, based on the data a questionnaire is prepared. Nearly data of 234 patient were collected which include case history, demographic details, reason of consumption, part medical history, laboratory values, and drugs prescribed with their dosage and frequency of poison consumption were collected.¹⁰ All patients as age below 18 to 60 who consumed poison are to be taken for study. The study was conducted for (September 2016 - May 2017).

Inclusion criteria

The patient who consumed poison who undergone ventilation patient age below 18 to 60. Patient of both sexes

Exclusion criteria

- Who are not willing to give information.
- Pregnancy and lactating mother.
- Infectious diseases (AIDS, TB)

Study material

Patient consent form

Consent was collected by using self designed patient consent form and consent was made into three languages English, Telugu, Hindi. The Study was approved by Institutional Ethical committee of Narayana Medical College and Hospital, Nellore.

Data analysis

A data was analyzed by demographic details reason for admission and frequency as stay in ICU. Prescribe antidotes, severity in conditions. Complications during treatment and survival rate, laboratory values drugs prescribed was analyzed by statistical software's the data was analyzed by using MS - excel and result was given by percentage.^{11,12}

RESULTS

The demographic details of the patients shows that maximum patients were male and minimum females, and the age group mostly consumed poison were 18-24 with marital status of married were maximum, with educational

level of mostly secondary and nutritional status of poor.¹³⁻¹⁷

Table 1: The demographic details of the patients including age sex, marital status, educational level, nutritional status.

Demographics	No. of patients	Percentage (%)	
Age	18-24	72	30
	25-35	36	15
	36-45	27	11
	46-52	72	30
	52-60	27	42
Sex	Male	127	54
	Female	107	46
Marital status	Married	135	58
	Unmarried	99	42
Educational level	Primary	72	31
	Secondary	126	54
	Tertiary	36	15
Nutritional status	Poor	126	54
	Average	72	31
	Well nourished	36	15

Table 2: The reason for consumption, the maximum consumption is due to mental disorder and family disharmony.

Reasons	No. of patients	Percentage (%)
Family disharmony	36	15
Mental disorder	63	27
Conflict in work area	18	07
Financial problem	36	15
For tradition medicine	27	12
Drug abuse	09	04
Unsuccessful love failure	27	12
Domestic violence (pregnancy after raped)	09	04
Marital disharmony	09	04

Table 3: How much milliliters of poison consumed by the patients the maximum amount consumed by patients is below 50ml.

Amount consumed	No. of patients	Percentage (%)
Below 50ml	72	31
50-100ml	63	27
100-150ml	45	19
Above 150ml	54	23

The reason for consumption of poison was mostly mental disorder (Psychological stress) and financial problems.

The quantity of poison consumed by the patients was mostly 50ml and least of 100-150ml.

Table 4: The number of poison patients outcomes during and after the treatment.

Outmost outcome	No. of patients	Percentage (%)
Recovered	181	77
Death	27	12
Absconded	07	03
Discharge at request	09	04
Referred to higher hospitals	08	04

The maximum number of patients recovered after the consumption of poison and least referred to higher centers and some of the patients were died during treatment.

Table 5: The number of people suffered with respiratory distress or bronco-constriction and undergone for ventilation.

Treatment	No. of patients	Percentage (%)
Abnormal ventilation	180	77
Tracheostomy	54	23

The maximum number of patients is suffered with respiratory distress and broncho- constriction and undergone normal ventilation and tracheostomy.

Table 6: The signs and symptoms of patients consumed OP poisoning and most of the patients experienced bradycardia.

Signs and symptoms	No. of patients	Percentage (%)
Bradycardia	207	88
Hypotension	180	76
Bronchospasm	162	69
Severe respiratory distress	198	85
Hyper salivation	90	38
Abdominal pain	72	31
Fecal incontinence (constipation)	207	88
Incontinence	124	53
Blurred vision	36	15
Suture	09	04
Anxiety	72	31
Coma	05 (recovered within 5days)	02
Confusion	108	46
Ataxia	117	50

The signs and symptoms of the poison consumed patients were mostly bradycardia, respiratory distress, fecal incontinence and least were abdominal pain. Procedure

followed in the emergency ward after entering into the hospital.

Table 7: The antidotes given to the patients for their survival and for the outcomes.

Antidote	No. of patients	Percentage (%)
Atropine	234	100
Paralidoxime	234	100
Glycopyrrolate	216	92.30
Diazepam	234	100

The antidotes given to patients for their survival are mostly atropine, paralidoxime, diazepam for sedation and Glycopyrrolate for the recovery.

Table 8: The procedures followed during hospital admission.

Procedure	No. of patients	Percentage (%)
Stomach lavage	234	100
Irrigation of eyes with isotonic solution	90	38.46
Airway control	171	73.07
ECG	234	100
IV magnesium sulfate	162	69.23

Table 9: The classes of antidotes given for the OP poisoning patients to overcome the symptoms and conditions.

Classes of antidotes given	No. of prescriptions	Percentage (%)
Anticholinergic (Atropine)	234	100
Antimuscarinic (Glycopyrrolate)	198	84.61
Acetylcholinesterase inhibitors (PAM)	234	100
Benzodiazepam (Diazepam)	216	92.3

Table 10: The other treatment given to the patients to overcome the complications and infections.

Medications	No. of patients	Percentage (%)
Lasix (Furosemide)	98	41.88
Avil (pheniramine malate)	117	50.00
Ceftriaxone-1gm	234	100
PPI's/H2RA – Pantoprazole	234	100
Hydrocortisone	198	81.19
Amoxicillin + Potassium	99	42.30
Ranitidine	36	15.38

The classes of drugs given for the OP poison were Anticholinergics, Acetylcholinesterase inhibitors,

benzodiazepines and antimuscarinic are the classes of drugs for poison. The treatment given to patients to overcome the complications like ICU infections, gastric irritation and the drugs given were mostly Furosemide, Pantoprazole, ceftriaxone.

Table 11: The investigations performed to the patients to check the abnormalities occurred due to poisoning.

Lab tests performed	No. of patients raised	Percentage (%)
CBP - Hb	63	26.92
ESR	36	15.38
WBC	18	07.79
PC	27	11.53
HCT	27	11.53
MCH	09	03.84
MHCH	36	15.38
PCV	09	03.58

The investigations performed to the patients to check the abnormalities occurred due to poison and find that only some of the parameters are raised lie Hb, ESR, PC, HCT.

Table 12: The estimation of serum cholinesterase to check the therapy is either effective or not.

Serum cholinesterase	No. of patients	Percentage (%)
Performed	180	76.92
Not performed	54	23.07

The serum cholinesterase test was performed to check the effectiveness of therapy and performed only in 180 out of 234 patients.

Table 13: The patients with the changes in the color of the urine.

Discoloration of urine	No of patients	Percentage (%)
Normal	72	30.07
Yellow color	36	15.38
Chocolate brown	90	38.46
Red	36	15.38

The change in discoloration of urine due to drugs and poison and the color observed was mostly chocolate brown, yellow color, and red.

According to the summary the number of patients consumed poison in different months was analyzed and the maximum consumption was observed in October, august, march and least in June.

The clarity on poison consumption for the patients admitted in the hospital are mostly poison unknown,

patients brought the container, patients without container and known poison.

Table 14: The no of patients consumed poison according to month wise.

Month	Month wise consumption	Percentage (%)
February	25	10.68
March	30	12.82
April	20	08.54
May	25	10.68
June	19	08.11
July	25	10.68
August	31	13.24
September	25	10.68
October	34	14.52

Table 15: Indicates that the patients admitted with known poison or unknown poison to treat or to make the treatment easy.

Clarity on poison	No of patients	Percentage (%)
Poison known	108	46.15
Poison unknown	126	53.84
Patient bring the containers	126	53.84
Patients without containers	108	46.15
Due to smell	Nil	0

DISCUSSION

Out of 234 patients who are admitted in the hospital with poison consumption are of age group 18-60 (100%) and both sexes (100%) with secondary level education and nutritional status of mostly poor.^{1,2,11} The reason for admission in the hospital is due to mental disorder (depression) (27%) and family disharmony (15%) and financial problems (15%). The people consumed poison of less than 50ml is more (31%) and 50-100ml is (27%).¹³ The people under abnormal ventilation is required for 180 (77%) and tracheotomy for 54 (23%) patients. Maximum all the signs and symptoms are observed and mostly bradycardia (88%) hypotension (76%) and bronchospasm (69%) are commonly observed.^{18,19} All the patients are treated with antidotes like atropine (100%) and paralidoxime (100%) and sedatives like diazepam is given (100%) and all the normal procedures were followed, and the maximum classes of antidotes are Anticholinergics. Normal medications like antibiotics and other are prescribed in hospital stay. Laboratory tests performed to check the ranges in the patients.^{20,21} Estimation of serum cholinesterase was performed in 180 (77%) patients to know the condition of the patient.²² Discoloration of urine was observed maximum in chocolate brown (90%) and maximum cases was observed in March and August and the people consumed poison also have clarity on poison is 100% with all the readings are tabulated as above.^{23,24}

CONCLUSION

From this study, concluded that the patients consumed poison is mainly due to mental disturbances and financial problems. The stress and burden on the life will shows the effect after consumption, the maximum people suffer with respiratory problems due to poison consumption. If the government should take the measures to avoid consumption of poison and availability of poison to the public may overcome the complications and reduce the deaths due to poison consumption. The easy availability may lead the person to take decisions without knowledge. As authors are the clinical pharmacists we should create awareness. In the areas about their lifestyles and causes after consumption may avoid poison consumption. So many researches want to do to show complications due to poisons.

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