



## CLINICAL SPECTRUM OF ORGANOPHOSPHORUS POISONING IN EMERGENCY DEPARTMENT.

<b>Sreekanth P</b>	Associate Professor, PSIMS, Vijayawada.
<b>Jayaraju.B</b>	Associate Professor, Bhaskara medical college, Hyderabad.
<b>Krishna Crps*</b>	Associate Professor, KIMS, NARKATPALLY. *Corresponding Author
<b>Srinivas. Y</b>	Assiatant Professor, PSIMS, Vijayawada.

### ABSTRACT

Organo-phosphorus compounds have been used in India since 1952 for agricultural purpose. but we got alerted after food poisoning tragedy occurred in 1958 about their poisoning effects. In our country where agriculture is the main occupation and the people in rural do not follow all the precautions during spraying, they become victims of the accidental acute poisoning and sometimes of chronic poisoning. We are at risk of chronic poisoning from those agents by ingestion of vegetables and so on which contain significant amount of these compounds. The number of people who misuse these pesticides for suicidal purpose is increasing now a days.

**AIM AND OBJECTS:** To study the clinical spectrum of the organo-phosphorus poisoning in patients coming to emergency ward.

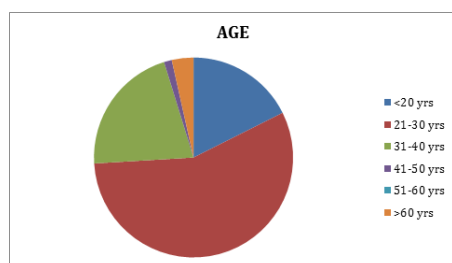
**MATERIALS AND METHODS:** 120 cases of the acute poisoning due to organophosphorus pesticides was studied in detail after the diagnosis of organophosphorus poisoning was made. Blood samples were collected for estimation of blood sugar, urea, SGOT and electrolytes. gastric-lavage was done at the earliest and specific therapy was started. ECG was obtained both at the time of admission and at the time of discharge.

**RESULTS:** In this study incidence among the age group 21-30 yrs of age(%).

**KEYWORDS:** Pesticides, Organophosphorus poisoning, Clinical spectrum, Gastric lavage.

### Age - wise distribution :

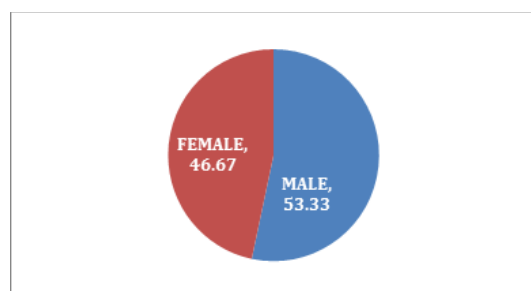
Age Group	No. of Cases	Percentage
< 20years	20	16.66
21-30 years	64	53.33
31-40 years	24	20
41-50years	8	6.66
51-60 years	-	-
>60 years	4	3.33



### Sex wise Distribution:

In this study incidence among the male sex (53.3%) to female ratio (46.6%).

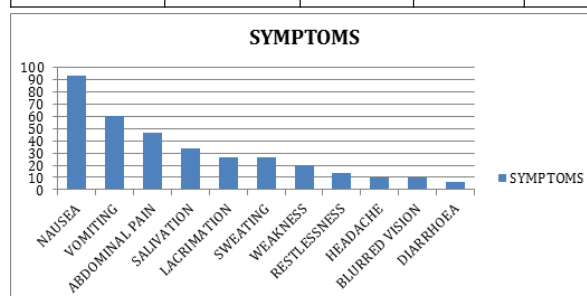
Sex	No of Cases	Percentage
Male	64	53.33
Female	56	46.67



### Clinical Spectrum in Studied Cases:

In the present study nausea (93.3%); vomiting (60%); abdominal pain (46.6%); salivation (33.3%); sweating and lacrimation (26.6%); weakness (20%); restlessness (13.3%); headache, blurred vision (10%) and diarrhoea (6.6%) were comparable to the pattern reported by Kumar et al [7] and Goel et al [2]

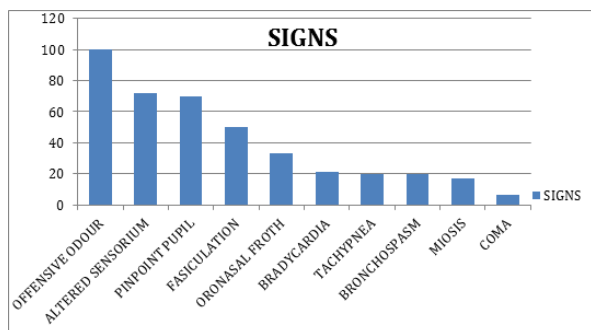
symptom	PRESENT STUDY CASES	Percentage	A P N Kumar et al	Goel et al
Nausea	112	93.33		
vomiting	72	60.00	93%	97.08
Abdominal pain	56	46.66		
salivation	40	33.33	85%	28.15
sweating	32	26.67	-	-
lacrimation	32	26.67	80.06%	-
weakness	24	20.00		
Restlessness	16	13.33		
Headache	12	10.00		
Blurred vision	12	10.00		
Diarrhea	8	6.67		



### Observed signs in studied cases:

In this study the clinical signs observed were offensive odour (100%); altered sensorium (72%); pin point pupil (70%); fasciculations (50%); oronasal froth (33.3%); bradycardia (21%); tachypnoea (20%); bronchospasm (20%); miosis (16.7%) and coma (6.6%). These observations were comparable to the studies of Goel et al [2]

Sign	Present Study Cases	%	Goel et al
Offensive odour	120	100	
Altered sensorium	92	72%	75%
Pinpoint pupil	84	70.00	
fasciculations	40	50	55%
Oronasal froth	40	33.33	
bradycardia	32	21%	-
tachypnea	24	20%	42.5%
Bronchospasm	24	20.00	
Miosis	20	16.7%	95%
Coma	8	6.67	



OP poisoning was common in young adults of either sex belonging to low socio-economic group; Nausea with or without vomiting; papillary constriction, abdominal pain, cardiovascular sign of rhythm abnormalities as well as bronchospasm and altered sensorium are the commonest clinical signs.

#### DISCUSSION:

This high incidence is due to the fact that the surrounding of rural areas are mainly of agricultural occupation with the main crops cultivated being paddy, maize, chilly and cotton which frequently require their use. The incidence of the poisoning is maximum during the period between July and April but may occur anytime of the year.

Nausea and vomiting are earliest and commonest symptoms observed in our study. Nausea was present in 93% and vomiting in 60% of cases. The gastrointestinal system usually affected initially because the poisoning is taken orally. The pungent smell and bitter taste provokes nausea and vomiting. These symptoms persist owing to muscarinic effect of acetylcholine. Shankar *et al* [1] observed around 56% whereas Gupta, Patel *et al* [2] observed 76% of these symptoms in their study.

In our study abdominal pain was observed in 46-66% of the patient, mostly on the first and second day. This is due to increased tone and rhythmicity of duodenum. Stomach irrigation procedure may contribute partially to it. Duodenum appears to be very susceptible to the effect of cholinesterase inhibitor and the fall in cholinesterase level in the intestine is likely to cause severe spasm and gripping pain in the upper abdomen. The pain was self-limiting in all the patients. Shankar *et al* [1] observed around 32% whereas Gupta, Patel *et al* [2] observed 36% of these symptoms in their study.

In our study, oro-nasal froth was observed in 33.33% of cases name and name reported oronasal froth in 30% and 40% of the patient respectively. The froth in the mouth due to increased secretion from bronchi and increased production in saliva. It is highly sensitive to atropine therapy. Shankar *et al* [1] observed around 30% whereas Vishwanathan *et al* [4] observed 40% of these symptoms in their study.

Breathlessness was observed in 33.33% of cases this was mainly due to bronchospasm and excessive secretion due to muscarinic, nicotinic and CNS effect singly or in combination may cause breathlessness. Shankar *et al* [1] observed around 28% whereas Vishwanathan and Srinivasan *et al* [4] observed 42% of these

symptoms in their study.

Diarrhoea was observed in 6.67% of cases daily on first and second day. Tiwari *et al* [5] observed this in 3.2% of patients leading to dehydration was not seen in any cases it was mild and watery.

General weakness was observed in 20% of cases. The increased fatigability and muscular weakness is due to the nicotinic effect of poisoning and was seen mainly in severe poisoning cases. Headache and blurred vision were seen in 10% patient. Convulsions were not observed in any case.

Amongst signs, miosis was the most consistent sign of organophosphorus poisoning, it was observed in 86.67% of the patient with pin point pupil in 70%. In fact the poison was suspected in many of the patient with kerosene or garlic odor and miosis which maybe reactive initially and become non reactive as they assume pin point pupil size, with treatment miosis was the last sign to appear and it may take few hours or 1 to 2 days to disappear. Shankar *et al* [1] observed miosis in 58% cases whereas Pandurangarao *et al* [4] 70% of cases. It does not indicate the severity of poisoning and its disappearance is not constant.

Fasciculation were observed in 50% cases. They are because of increased amplitude of miniature and end plate potentials due to accumulation of acetylcholine and increase in the spontaneous frequency of the end plate potentials. With administration of PAM the fasciculation disappeared within few hours to 1 to 2 days.

Shankar *et al* [1] observed fasciculation in 20% of case and Balani *et al* [6] observed them in 30% and Gupta *et al* [2] observed the same in 32% of the cases.

Unconsciousness was observed in 6.67% of cases that is the two cases who were admitted in grade 5 poisoning one of them expired. Shankar *et al* [1] observed coma in 14.7% of patient and Vishwanathan and Srinivasan *et al* [4] 10% of cases.

In our study we did not observe any cranial nerve paralysis or cerebellar sign or neurotoxicity which was observed in some of the previous studies done by other workers.

Rhonchi were observed in 12.20% of the patient and are due to bronchospasm. With the treatment rhonchi disappeared in few hours to 1 to 2 days. Vishwanathan and Srinivasan *et al* [3] observed rhonchi in 45% of patients and Gupta, Patel *et al* [2] found in 30% of cases.

Respiratory distress is multi-factorial, the excessive secretions in the oral cavity and bronchial passage are likely to bring about sign of pulmonary congestion and oedema. The bronchospasm from muscarinic effect adds to the difficulty in breathing leading to shortness of breath and cyanosis. Accumulation of fluid in air passage and bronchospasm leading to obstruction ventilator is sufficient. The CNS effects add to respiratory difficulty by depression of respiratory centre.

Respiratory paralysis is due to the nicotinic effect on respiratory muscle and it was observed in eight patients in our study (13.33%). They were put on ventilator. Three of them expired and one patient recovered. Panduranga Rao *et al* [4] observed the same in 8.6% of patient.

Sinus bradycardia was observed in 6.67% of patient. Sinus tachycardia was observed in 10%. Bradycardia can occur due to direct effect of the compound on the sinus node. It is a muscarinic sign but not frequently observed. Gupta *et al* [2] observed bradycardia in 12% cases. Tachycardia may be due to nicotinic effect of poisoning or due to the anxiety of the patient [7,8]. Shankar *et al* [1] observed tachycardia in 19.6% of patient.

Hypotension as a terminal event was observed in three patients and

none of them responded to dopamine and other supportive measure.

#### CONCLUSION:

Organo-phosphorus compounds are frequently used for suicidal purpose by young population. Most from them are farmers and their family members. It is one of the major killers of suicidal attempts of young in medical wards of any hospital.

Common manifestations of poisoning are nausea, vomiting, excessive secretion, miosis, fasciculation and sign of bronchospasm and pulmonary oedema[7]. SGOT levels through showing a mild increase do not appear to be of any prognosis value. Clinical deterioration was observed in some cases initially inspite of effective therapy. PAM and ventilator support increases survival after poisoning..

The best way of prevention would be to uplift the socio-economic standard of the rural poor which will help the quality of life.

#### REFERENCES:

- [1]. Shankar P.S: Diazinon Poisoning – a study of 143 cases. Quarterly medical review – Raptakos & Brett and Co Ltd Combined volume Oct [1977-79].
- [2]. Gupta [Patel]: Diazinon poisoning JAPI 1968, 16 - 457.
- [3]. Vishwanathan [Srinivasan]: - Poisoning, a preliminary study. JIMA, 1962: 39; 345
- [4]. Panduranga rao et al : Clinical profile of 100 cases of poisoning admitted to AMC unit JAPI 1992 40 (12) –(839).
- [5]. Tiwari et al -: Poisoning with O.P Insecticides, JIMA 1967 :48-153.
- [6]. Balani et al ; Diazinon poisoning – a report of 100 cases with particular reference to treatment JAPI 1968: 16- 910,
- [7]. APN Kumar et al ; Clinical profile of organophosphorous compound- NIMS experience: (2001).
- [8]. Vijayakumar, Faredullah Md, Kumar EA, Rao KM ; Cardiovascular toxicology 2011, 11,(2), 113-117.