Research Paper

Volume : 3 | Issue : 12 | December 2014 • ISSN No 2277 - 8179

Treatment Of Cases of Organophosphorous Compound Poisoning According to Symptom Score System

Medicine

KEYWORDS :

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ABSTRACT

AIMS AND OBJECTIVES

The present study of patients presented with organophosphorous poisoning was carried out with the following objectives,

1) To study the clinical course of patients of organophosphorous poisoning having various grades of severity as managed by symptom score method.

2) To correlate the level of cholinesterase activity in blood with severity grading by symptom score method.

3) To study severity of toxic effects of various organophosphorous compounds consumed by our patients of organophosphorous poisoning.

MATERIAL AND METHODS

All the adult patients admitted in our hospital with an alleged history and signs / symptoms suggestive of OP poisoning were considered s study material.

Clinical diagnosis of OP poisoning was established by detailed clinical and circumstantial history as well as smell of organophosphorous compounds from body parts, clothes, breath and gastric aspirate obtained from stomach wash. After an emergency stomach lavage with a wide bore stomach tube, a detailed clinical examination was done in each patient. Before specific therapy with atropine was given, blood for plasma cholinesterase level estimation was sent to the laboratory. The normal reference value for plasma cholinesterase is 2900-5800 units/l. A particular score was given to certain symptoms/signs of OP poisoning when present and total score was calculated as follows,

SYMPTOM SCORE

Nausea/vomiting/sweating/diarrhea	*1 for each*
Excessive salivation/lacrimation/miosis/fasciculations	*2 for each*
Coma/convulsion	*3 for each*
Admission pseaudocholinesterase below 10% of normal	*4*

Each patient was categorized in mild,moderate or severe grade as per the total score as follow,

score	*grade*
<4	*Mild*
4-8	*Moderate*
>8	*severe*

CONCLUSION

The clinical severity guidelines which we used in the study was very simple, easy, informative but had only limited diagnostic correlation with the plasma cholinesterase level when reduced to <10% of normal value only. While no consideration was given to mild or moderate reduction in scoring for severity and/or treatment. Though plasma cholinesterase level do correlate with severity of poisoning, it doesn't have any added significance in either diagnosis or management and when clinical features do suggest diagnosis and severity of poison, this investigation may not be insisted unless for academic interest. The therapeutic guidelines given in the symptom score method was found to be effective and safe in mild to moderate grade of poisoning , however further study with more sample size in severe grades is required to opine in severe cases.

INTRODUCTION

- Organophosphorous compounds are commonly used insectisides by agricultural community throughout the world including India.
- Unregulated sale of these insecticides have led to the misuse of these compounds for purpose like suicidal attempts, with moderate to high fatality rates, particularly related to delay in presentation and diagnosis or improper treatment.
- Lack of knowledge and training for use as insecticides spray has also led to many cases of accidental poisoning in labourers in agricultural parts.
- OP poisoning is a common form of poisoning in India.
- The use of atropine in intoxication with cholinesterase inhibiting substances remains the cornerstone of symptomatic treatment.
- Atropine is considered as a mainstay of treatment to reverse the muscarinic effects and the dose is to be titrated against the response in individual patient.
- Various conflicting reports are available regarding the dose and route of administration of atropine.
- The dosage of atropine should be high enough to antagonise muscarinic effects, but just adequate to prevent symptoms of atropine intoxication.
- Mode of administration of atropine as iv bolus or iv infusion in OP poisoning is debated.
- Atropine should be given as 2-4 mg iv followed by 2 mg every 5-10 minutes until muscarinic symptoms disappear or signs of atropine toxicity appear.
- It has been mentioned that infusion of atropine may be given in severe cases but severity grading has not been specified in any textbook.
- This many times lead to an overzealous treatment with very high doses of atropine and troublesome over atropinisation in mild to moderate cases or sometimes a very conservative approach of nondrug or low dose of atropine for a shorter than required time leading to delayed morbidity and sometimes mortality.
- One article by Dr. V. Verappan described a very simple but specific scoring system, for grading the patients in mild, moderate or severe poisoning and treatment guidelines for

all the grades of severity.

- We find that scoring system includes all the types of symptoms of organophosphorous like gastrointestinal, muscarinic as well as CNS and due significance was given by increasing the number of score to serious symptoms or signs.
- The advantages of this regimen are that:
- There is no need to constantly monitor pupil size to administer atropine.
- Ensures gradual tapering of atropine, thereby preventing withdrawal symptoms like pulmonary oedema.
- A definite duration of treatment.
- As the scoring system also appeared to be very simple, non-invasive and practical, we thought it worthwhile to implement it in our patients of OP poisoning to have first hand experience of its utility.

AIMS AND OBJECTIVES

- The present study of patients presented with op poisoning was carried out with the following objectives:

a) To study the clinical course of patients of organophosphorous poisoning having various grades of severity as managed by symptom score method.

b) To correlate the level of cholinesterase activity in blood with severity grading by symptom score method.

c) To study severity of toxic effects of various op compounds consumed by our patients of op poisoning

d) **Symptom Score Method** **SCORE**

- **Nausea/ vomiting/**
- **sweating/ diarrhoea** **1 for each**
- **Excessive salivation/**
- **lacrimation** **2 for each**
- **coma/ convulsions** **3 for each**
- **Admission cholinesterase**
- **level below 10% of normal** **4**

symptom score	grade
<4	mild
4 to 8	moderate
>8	severe

MATERIAL AND METHOD

- All the adult patients admitted in our hospital with an alleged history and signs/symptoms suggestive of op poisoning were considered as study material.
- Clinical diagnosis of op poisoning was established by detailed clinical examination and history as well as smell of op compounds from body parts, clothes, breathes and gastric aspirate obtained from stomach wash.
- Before specific therapy with atropine was given, blood for plasma cholinesterase estimation was sent to the laboratory.
- After that, a particular score was given to certain symptoms/ signs of op poisoning as described above and total score was calculated and each patient was categorized in mild, moderate or severe grade as per total score.
- Patients with mild grade of poisoning (score <4) were not given atropine at all but were observed clinically in ward for worsening of any signs / symptoms for 2-3 days.
- Patient with moderate grade (4-8) were treated with atropine as an intermittent bolus in a dose of 0.05 mg/kg IV bolus stat and then repeated every five to ten minutes until signs and symptoms of atropinisation were observed and then atropine was stopped.
- While patients in severe grade were treated with continuous infusion of atropine.
- Patients who had later developed respiratory depression were put on mechanical ventilator.

OBSERVATION

1) NUNBERS OF PATIENTS AFFECTED

Age in years	Male no. (%)	female no. (%)	total no. (%)
below 30	30 (33.33%)	34 (37.77%)	64 (71%)
31-40	12 (13.33%)	05 (5.55%)	17 (15.5%)
41-50	07 (7.77%)	00	7 (7.77%)
>51	02 (2.22%)	00	2 (2.22%)
total	51 (56.66%)	39 (43.33%)	90

- Acc. to above table, more male patients were found in our study as compared to females.
- Majority of patients were below the age of 30 years.
- Mean age in our study was 27 years.

In this study, 80 patients were with suicidal and 10 patients with accidental consumption

2) CLINICAL PRESENTATION

SYMPTOMS	NUMBERS	PERCENTAGE
NAUSEA	83	92.22%
VOMITING	47	52.22%
SWEATING	26	28.88%
DIARROHEA	3	3.33%
SALIVATION	9	10%
LACRIMATION	11	12.22%
MIOSIS	72	80%
FASCICULATIONS	13	14.44%
CONVULSION	4	4.44%
COMA	7	7.77%

- Acc. To above, majority of patients had G.I. upset in form of nausea (92.22%) and vomiting (52.22%) on presentation. While miosis was the most frequent finding noted in 80% of patients.
- 24 patients had CNS manifestations in the form of muscular fasciculations, convulsion and coma.

3) CLINICAL SEVERITY

CLINICAL SEVERITY	AVERAGE SCORE	NUMBER OF PATIENTS	PERCENTAGE
MILD (<4)	2.62	40	44.44%
MODERATE (4-8)	5.83	42	46.66%
SEVERE (>8)	11.3	8	8.88%

- In all patients, symptom score was calculated and patients were classified in three clinical severity groups as mild, moderate and severe.
- Acc. To above table, only 8.88% of patients had severe grade of op poisoning effects, while majority of patients were presented as mild to moderate grade of poisoning.

Volume : 3 | Issue : 12 | December 2014 • ISSN No 2277 - 8179

- Patients with mild poisoning (symptom score <4) were admitted but treated only by stomach wash and antacid. They didn't receive atropine and observed clinically for 2-3 days, but there is no worsening of symptoms or death in these patients.
- Mortality in moderate cases (score 4-8) was about 10% and in severe cases it was 75% in spite of giving IV atropine infusion.
- 4 patients with severe poisoning developed respiratory failure. They were treated with mechanical ventilator and high doses of atropine as continuous iv infusion.
- None of the patients with mild poisoning developed any complications despite non-drug therapy.
- All of the patients who died in the severe group had cholinesterase level in plasma <10% of the normal (2900-5800 U/L), which itself suggested very severe poisoning.
- Whereas in patients in other two groups, the mean plasma cholinesterase was near normal to normal levels.

SUMMARY

- More no. of young male patients consumed op compound with an intention to commit suicide.
- The majority of patients had G.I. upset on presentation and miosis was a commoner finding.
- Mean plasma cholinesterase levels were near normal in mild groups, slightly reduced in moderate group, while severely low in severe group.
- None of the patients in mild group was given atropine or PAM, all of them had an uneventful recovery.
- We found no mortality in mild group, while it is 10% in moderate group and 75% in severe group.
- The major complication in this study was respiratory failure requiring mechanical ventilation.

CONCLUSION

- The clinical severity guidelines which we used in the study was very simple, easy, informative but had only limited diagnostic correlations with the plasma cholinesterase level when reduced to <10% of normal value only.
- Though plasma cholinesterase level correlate with the severity of poisoning, It does not have any added significance in either diagnosis or management and when clinical features suggest diagnosis and severity of poison, this investigation may not be insisted unless for academic interest.
- The therapeutic guidelines given in the symptom score method was found to be effective and safe in mild to moderate grade of poisoning.
- However further study with more sample size in severe grade is required to opine in severe cases.