

# Outcome among Patients of Organo-Phosphorous Compound Poisoning in Comparison with Scoring System Applied.

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## ABSTRACT

**Background:** Organo-phosphorous compound poisoning is an important medical emergency in which if early treatment is not received the mortality is high. The leading cause of death is due to respiratory failure, which results from combination of respiratory muscle weakness, central respiratory depression, increased bronchial secretions, bronchospasm and pulmonary edema. **Methods:** For a period of 2 years, a total of 1200 poisoning cases were admitted in the Government Medical College Hospital, Nanded. Out of them, 240 were the cases of Organo-phosphorous compound poisoning. After applying inclusion and exclusion criteria, and after having the completed questionnaires, finally it was possible to include 200 patients. **Results:** Maximum number of patients who died was in the severe grade at the time of admission. In moderately severe grade only one patient died. While there was no mortality in the mild and moderate grades of poisoning. It is observed that as the scoring increased the mortality also increased. In patients with score more than 30, it was almost 100%. So patients with higher scores were more at risk of death and this association was found to be statistically significant. ( $p < 0.05$ ). **Conclusion:** It can be concluded that all patients with Organophosphorous compound poisoning at admission should be assessed for scoring. Those having high scores should be given special attention.

**Keywords:** Mortality, Organo-phosphorous compound poisoning, Scoring.

## INTRODUCTION

Since 1945, some 15000 individual compounds and more than 35000 different formulations have come into use as pesticides. During this period as a result of widespread use of these agents and particularly the organophosphates, physicians have been called on to diagnose and manage a large number of poisoning cases. Mostly frequently these patients present as life threatening cholinergic crisis with meiosis, sweating, salivation and respiratory paralysis.<sup>[1]</sup> The nature of poison used varies in different parts of the world and may even vary in different parts of same country depending on socioeconomic factors and cultural environment. In developed countries household agents and prescribed agents are the usual agents used for poisoning where as in developing countries, agrochemicals are the commonest agents.<sup>[2]</sup> The incidence of deaths due to poisoning has steadily increased in the recent past and has reached a level where it can be called as social calamity.<sup>[3]</sup> Organo-phosphorous compound poisoning is an important medical emergency in which if early treatment is not received the mortality is high. The leading cause of death is due to respiratory failure which results from

combination of respiratory muscle weakness, central respiratory depression, increased bronchial secretions, bronchospasm and pulmonary edema. Use of a scoring system is very important to predict the outcome in the patients of organo-phosphorous compound poisoning. Hence present study has been undertaken to study the outcome in comparison with the scoring system applied.

## MATERIALS AND METHODS

For a period of 2 years, a total of 1200 poisoning cases were admitted in the Government Medical College Hospital, Nanded. Out of them, 240 were the cases of Organo-phosphorous compound poisoning. After applying inclusion and exclusion criteria, and after having the completed questionnaires, finally it was possible to include 200 patients. Thorough clinical examination with special reference to general examination, respiratory system, cardiovascular system and central nervous system examination was done.

Patient was evaluated clinically and following scoring system was applied.<sup>[4]</sup>

Nausea/vomiting/diarrhea/sweating (1 point each=4)

Lacrimation/salivation/meiosis/fasciculation (2 points each=8)

Seizures/incontinence/spells of apnea/areflexia (3 points each=12)

ARDS/Proximal muscle weakness (4 points each=8)

Coma/inability to sustain grade 3 power (6 points each=12)

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Total points=52

Grading was as follows:

1. Mild : Score less than 6
2. Moderate: Score 7 to 10
3. Moderately Severe: Score 11 to 16
4. Severe: Score more than 16

Every patient was treated with general guidelines for Organo-phosphorous compound poisoning. Data was entered in Microsoft excel sheet and analyzed with the help of proportions and result was compiled to obtain the conclusion.

## RESULTS

Maximum number of patients who died were in the severe grade at the time of admission. In moderately severe grade only one patient died [Table 1]. While there was no mortality in the mild and moderate grades of poisoning. It is observed that as the scoring increased, the mortality also increased. In patients with score more than 30, it was almost 100%. So patients with higher scores were more at risk of death and this association was found to be statistically significant [Table 2]. ( $p < 0.05$ )

**Table 1:** Grading of Organo-phosphorous compound poisoning according to scoring system applied and mortality

Grades	Number of cases	Deaths (%)
Mild (score < 6)	54 (27%)	00
Moderate (score 7-10)	57 (28.5%)	00
Moderately severe (score 11-16)	27 (13.5%)	01 (1.72%)
Severe (score > 16)	62 (31%)	57 (98.28%)

**Table 2:** Scoring and mortality of Organo-phosphorous compound poisoning patients

Score	Number of cases (%)	Deaths (%)
0-10	111 (55.5%)	00
11-16	27 (13.5%)	1 (1.72%)
17-30	35 (17.5%)	30 (85.71%)
>30	27 (13.5%)	27 (100%)

Chi square = 174.5, df = 3,  $p < 0.01$

## DISCUSSION

In the present study the overall mortality was 58 (29%). Out of total 200 patients, 64 (32%) had respiratory paralysis. Out of these 64 patients having respiratory paralysis, 58 (90.62%) died. Mortality in type I respiratory paralysis was 89.36% and in type II it was 94.11%. Kulkarni R<sup>[5]</sup> observed in their study of 100 patients that the mortality rate was 15%. In their study, deaths due to type I respiratory paralysis were 70.58% and due to type II respiratory paralysis were 60%.

Kamble A<sup>[6]</sup> reported a mortality of 36.04%. In type I respiratory paralysis it was 31.16% and in type II it was 77.6%. Mulay A<sup>[7]</sup> observed a mortality of 22.68%.

In the present study the most common cause of death was respiratory paralysis contributed by pneumonia, tube block, extubation by patient himself or his relative and cardiac arrest. Cardiac factor contributed in 29.31% of cases.

Limaye MR<sup>[8]</sup> reported asphyxia mode of death by respiratory failure and toxic myocarditis. Tindol GA<sup>[9]</sup> reported mortality due to unplanned extubation, self extubation or extubation by relatives as an important cause.

Whelan J<sup>[10]</sup> described unplanned extubation, self extubation or accidental extubation as a common occurrence in mechanically ventilated patients.

Cause of death other than respiratory paralysis was observed by Singh S<sup>[11]</sup> was pulmonary edema in 50%, cardiac arrhythmia in 25% and pneumonia in 25% of patients. Klein OH<sup>[12]</sup> reported that out of

their 15 patients, 4 died due to cardiac complications. Bardin PG<sup>[13]</sup> reported respiratory infection with septicemia in 7 patients out of 10 studied.

In the present study, scoring system was applied to study the outcome and mortality of Organo-phosphorous compound poisoning patients. Mild score (< 6) was observed in 27% of cases, moderate score (7-10) was seen in 28.5% of cases, moderately severe score (11-16) was observed in 13.5% of cases and 31% of patients has severe score (> 16) Mortality was higher in severe poisoning. Out of 58 deaths, 57 patients were having severe scores and only one case was having moderately severe score. There was significant association between scoring and mortality. Higher the score, higher the possibility of death was observed.

## CONCLUSION

It can be concluded that all patients with Organo-phosphorous compound poisoning at admission should be assessed for scoring. Those having high scores should be given special attention.

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**How to cite this article:** Sreenivas T, Patro JP, Shegokar V, Gosavi VS . Outcome among Patients of Organo-Phosphorous Compound Poisoning in Comparison with Scoring System Applied. *Ann. Int. Med. Den. Res.* 2016;2(1):173-75.

**Source of Support:** Nil, **Conflict of Interest:** None declared