



Prognostic Significance of Plasma Pseudocholinesterase Levels in Acute Organophosphorus Poisoning

Authors

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Introduction

- Organo Phosphorus poisoning was the most common in India due to its easy access. occupational or suicidal or homicidal exposure produce toxic effects, high mortality and morbidity.
- OP compounds acts by inhibiting Acetylcholinesterase enzyme at nerve endings, neuromuscular junction causing overstimulation of Acetyl choline receptor. Signs and symptoms are mainly due to muscuranic, nicotinic and CNS receptor overstimulation.
- In acute OP poisoning severity parallels the decrease in pseudocholinesterase activity.
- Lab evaluation of pseudocholinesterase levels plays a crucial role in confirmation of poisoning and assessing the severity of OP poisoning.

Aims and Objectives

1. To estimate the level of Plasma Pseudocholinesterase.
2. To determine the association between level of Plasma Pseudocholinesterase and severity of Acute Organophosphorus poisoning.

Materials and Methods

A hospital based prospective cross sectional study was conducted on 30 subjects who were clinically diagnosed as Acute OP poisoning and admitted in ICU, GEMS Hospital, Ragolu, Srikakulam, AP.

Study Period: 9 months from July 2019 to March 2020.

Inclusion Criteria

- 30 subjects were included in the study with history of exposure to organophosphorus poisoning.

Exclusion Criteria

- Subjects with indication of exposure to entirely different poison.
- Subjects with history of consumption of OP compounds mixed with any other poison.

Sample Collection

- 3 ml of venous blood were collected from each subject on day 1,2,3, and 7 after admission
- Pseudocholinesterase levels were assessed in serum by Spectrophotometric method.

Statistical Analysis

- Data were expressed in percentages, Mean +/- SD.

- Bar diagrams, Pie charts and Tables were used to show the data graphically.

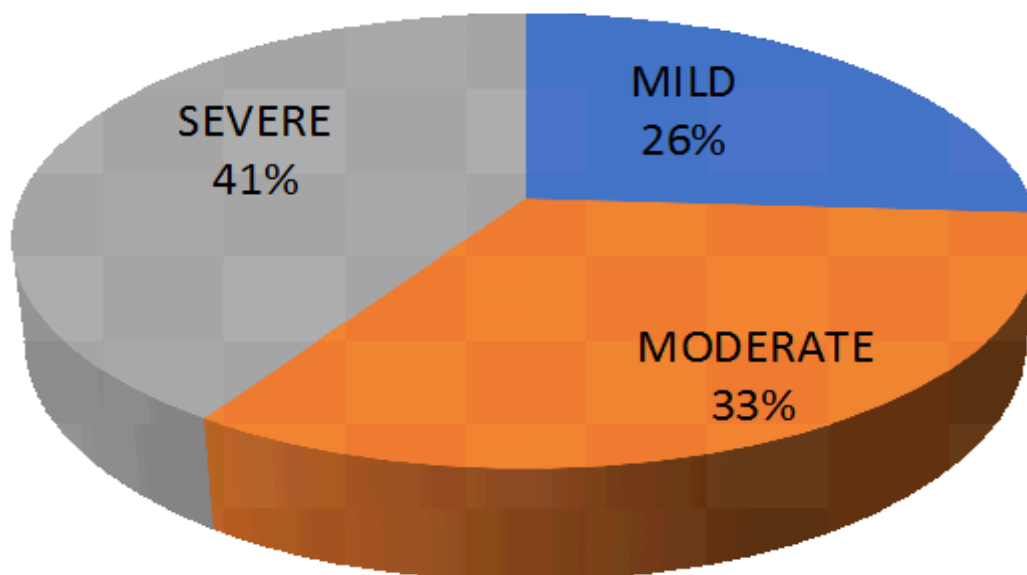
- Moderate (10-20% of normal pseudocholinesterase activity)
- Severe (<10% of normal pseudocholinesterase activity).

Results

Based on Plasma pseudocholinesterase levels at the time of admission, subjects were divided into

- Mild (20-50% of normal pseudocholinesterase activity)

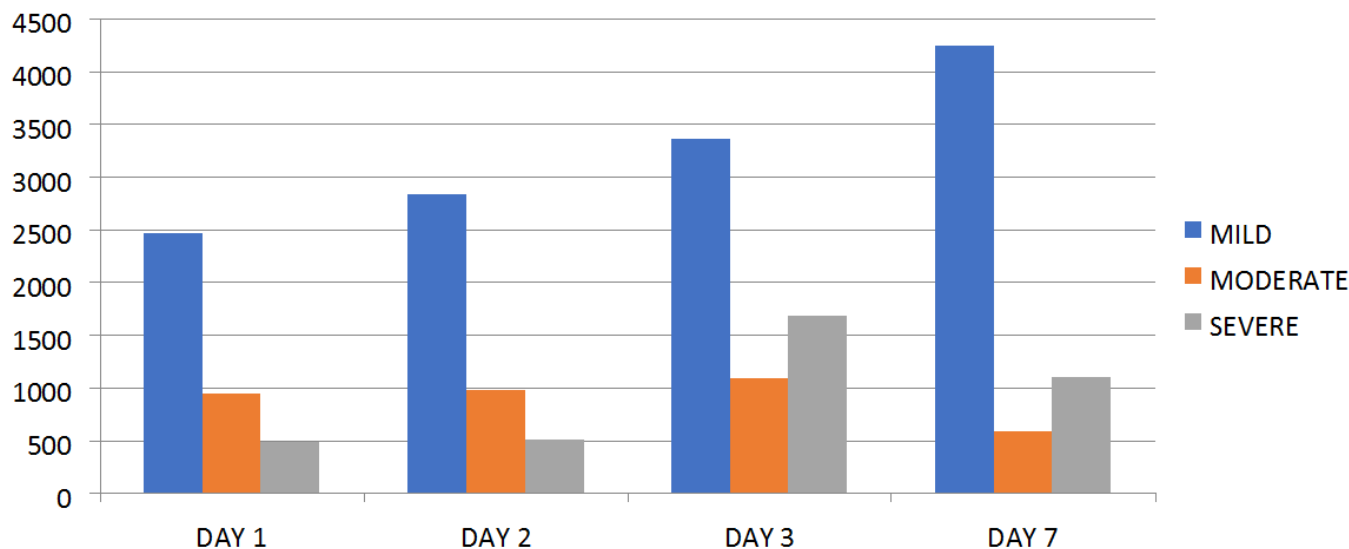
% Of Subjects Showing Mild, Moderate and severe reduction in Cholinesterase Levels



Mean Cholinesterase Levels on the day of Admission

	Mild	Moderate	Severe
MEAN	2461	941.9	479.17
SD	569.61	200.57	111.38

Comparison of Mean Cholinesterase Levels from Day 1 to Day 7 with Treatment



Discussion

- Acute OP poisoning presents as a medical emergency requiring monitoring and management in ICU.
- In this study cholinesterase levels were significantly reduced at the time of admission and have shown a gradual rise in cholinesterase levels with treatment.
- Similar findings were observed in the studies conducted by Amanvermez R et al., and Hundekari IA et al., demonstrating good correlation between plasma cholinesterase levels and severity of poisoning.

Conclusion

- In this study progressive decline in pseudocholinesterase levels with increasing severity were observed reflecting the possible correlation of OP poisoning and pseudo cholinesterase levels.
- Plasma pseudocholinesterase levels may be considered as a marker of OP poisoning, since it enables the early recognition of severity.
- It was found that upon treatment levels of Cholinesterase revert to normal followed by improvement in clinical condition of the patient.
- Hence early recognition and timely intervention of toxicity from these compounds are of great importance to patients.

References

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