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Research Article

AN ANALYTICAL STUDY ON THE RATE OF MORTALITY BECAUSE OF ORGANOPHOSPHORUS POISONING

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Abstract:

Objective: There is very high rate of morbidity as well as mortality because of OP (Organophosphorus) poisoning. The aim of this research work is to assess the rate of mortality because of OP poisoning.

Methodology: This elaborate & analytical research work carried out in the Medical unit & ICU of Mayo Hospital Lahore from November 2018 to April 2019. All the patients under suspicion of organophosphorus poisoning got admission in the hospital. We recorded the history & medical aspects of these patients. The standard of the diagnosis of this research work was history of the patients from their parent about the intake of OP poison & medical symptoms as too much bradycardia, salivation, wheezing & meiosis. The patients without the symptom of meiosis & patients who expired in the department of emergency before their arrival in the ICU or medical ward were not the part of this research work. SPSS V. 11 was in use for the statistical analysis of the collected information.

Results: In the duration of this research work, we studied the hundred patients with conform OP poisoning and we divided these patients according to the severity grades. The average age of the patients was 43 years. Seventy-eight percent were male and twenty-two were female patients. Twenty patients were in the group of mild severity, 40 patients were in the group of moderate severity and forty patients were in the group of severe grades. The most frequent site for exposure to OP poison was ingestion in 79.0% (n: 79), followed by inhalation & dermal absorption in 21.0% (n: 21). The clinical aspects like hyper salivation, metal state of depression, meiosis and wheezing were present in all hundred patients followed by lacrimation in 90.0% (n: 90), bradycardia in 58.0% (n: 58), hypotension in 76.0% (n: 76), chest crepitation in 80.0% (n: 80), vomiting in 69.0% (n: 69), cramps in abdomen cavity in 40.0% (n: 40). We saw the failure of the respiratory system in 42.0% (n: 42), sepsis in 5.0% (n: 5), seizures in 9.0% (n: 9), Pulmonary edema present in 19.0% (n: 19) & ARDS in 10.0% (n: 10) patients. Mean duration of stay in the hospital was 4.5 0 ± 2.50. The rate of mortality in this research work was 18%. Respiratory failure was the main reason of death in this research work.

Conclusion: The rate of mortality because of OP poisoning is very high in these regions. The early and easy diagnosis is possible with the identification of the clinical factors.

KEY WORDS: Poison, Organophosphorus, Mortality, Pesticides, Hypotension, Toxicity & Deaths, Diagnosis.

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INTRODUCTION:

OP pesticides are the main reason of the extreme toxicity & deaths due to acute poisoning in the whole world. Though the prevalence of the extreme acute OP poisoning due to pesticide is very low in the developed nations, there are many people with low dose unintentional and professional exposures appear in from of health centers [1]. The compounds of OP are chemical's diverse group mostly utilized in the agriculture, industry & domestic settings. Some of the examples are insecticides, nerve gases & herbicides [2]. In different countries of Asia as India, Srilanka and Pakistan, the unintentional and suicidal poisoning with the utilization of OP compounds is very important reason of high rate of mortality in the young populations [3]. According to the estimation of the WHO, 1 million extreme accidental & 2 million suicidal poisonings are occurring per year in the whole world, of which approximately 200000 persons die due to the poisoning of the pesticides particularly in the countries which are under development [4]. Because of the high rate of mortality because of organophosphorus poisoning, the conduction of this research work out. The aim of this research work is to assess the rate of mortality due to OP poisoning which is not frequent, fast progressive & very fatal complication.

METHODOLOGY:

This research work was carried out in the Medical Unit & ICU of the Mayo Hospital Lahore from November 2018 to April 2019. We admitted all the patients with suspicion of having poisoning because of OP. We filled a Performa by asking the question from the admitted patients and their parents or attendants with complete description of their family, social and economic background & environment of the work environment. We recorded the presentation mode & clinical outcomes.

The standards of diagnosis of the research work were history from the parent of patients about the intake of OP poison and clinical symptoms like too much

bradycardia, wheezing, salivation & meiosis. The patients with the non-availability meiosis & patients who met their deaths in the department of emergency before their arrival in the ICU & medical ward were not the part of this research work. SPSS V. 11 was in use for the statistical analysis of the collected information.

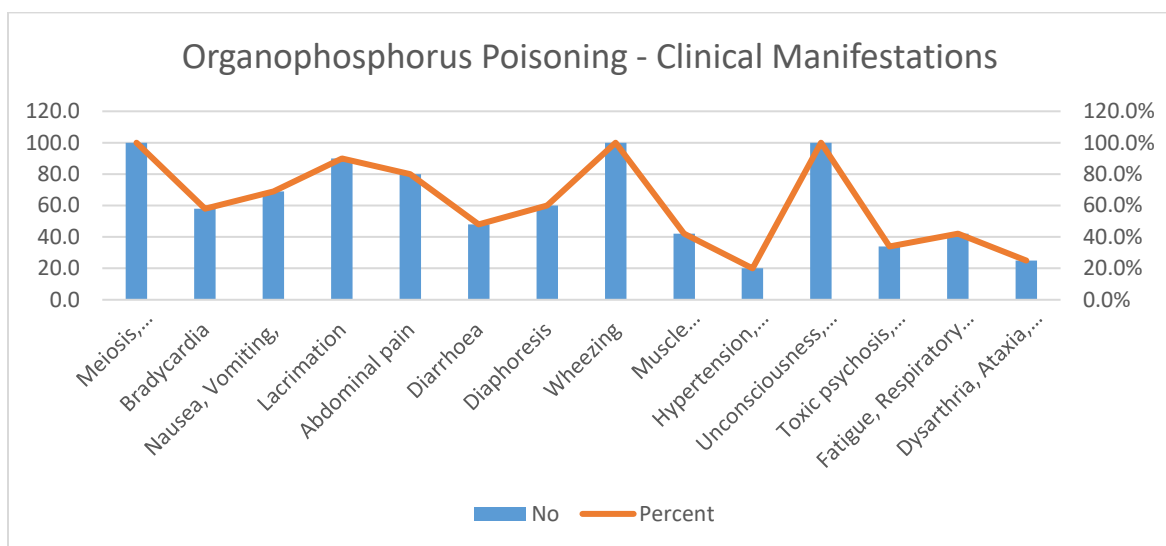
RESULTS:

In the duration of this research work, we study total one hundred patients with the identification of organophosphorus poisoning separated into severity grades. The range of the age of patients was from 18 to 58 years with an average e age of 37.50 ± 9.50 years & median age of 43.0 years. There were 78.0% (n: 78) male & 22.0% (n: 22) female patients. Out of total one hundred patients, 20.0% (n: 20) patients were available with mild severity, 40.0% (n: 40) patients were with moderate severity and 40.0% (n: 40) patients were available with severe disease. The very frequent site of the exposure to OP poison was ingestion in 79.0% (n: 79) patients followed by inhalation & dermal absorption available in 21.0% (n: 21) cases. The clinical factors like hyper salivation, meiosis, mental state of depression & wheezing were available in all one hundred patients followed by lacrimation in 90.0% (n: 90), bradycardia in 58.0% (n: 58), hypotension in 76.0% (n: 76), chest crepitation present in 80.0% (n: 80), vomiting in 69.0% (n: 69), cramps in abdomen cavity in 40.0% (n: 40), diarrhea in 48.0% (n: 48), Fasciculation in 42.0% (n: 42), cyanosis in 32.0% (n: 32), changes in ST in 30.0% (n: 30) & prolonged QTc in 20.0% (n: 20).

We found the increased muscle tone in 20.0% (n: 20), reduced in 48.0% (n: 48), depressed reflexes in 60.0% (n: 60) & exaggerated reflex systems in 15.0% (n: 15) patients. Table-1 is elaborately describing the clinical feature with percentage and amount of the cases. A mean stay in the hospital was 4.50 ± 2.50 with a range from 3 to 22 days, total 82 patients survived and eighteen patients died, the failure of the respiratory system was the main reason of death.

Table-1: Clinical Manifestations of Organophosphorus Poisoning

Clinical Features	No	Percent
Meiosis, Blurred vision, Salivation	100.0	100.0%
Bradycardia	58.0	58.0%
Nausea, Vomiting,	69.0	69.0%
Lacrimation	90.0	90.0%
Abdominal pain	80.0	80.0%
Diarrhoea	48.0	48.0%
Diaphoresis	60.0	60.0%
Wheezing	100.0	100.0%
Muscle Fasciculations, Paralysis Muscle weakness	42.0	42.0%
Hypertension, Tachycardia	20.0	20.0%
Unconsciousness, Confusion	100.0	100.0%
Toxic psychosis, Seizures	34.0	34.0%
Fatigue, Respiratory depression	42.0	42.0%
Dysarthria, Ataxia, Anxiety	25.0	25.0%

**DISCUSSION:**

There is very high use of OP pesticides in the field of agriculture in the whole world. The suicides with OP poison and unintentional poisoning are very vital clinical issue of the non-urban areas of the world. There is serious neurologic dysfunction because of the high exposure to the OP substances. Some of the neurologic symptoms are headache, watering from eyes & sensation of burning on eye or face [5]. One of the most important reason of the death is OP poisoning. Some research works from other countries

as Saudi Arabia [6] & other countries of the world [7, 8] are the proof of this increasing issue. Extreme suicidal poisoning is the main clinical problem in the populations of Asia. Several hospitals admit from 500 to 1000 patients each year with rate of mortality of more than 20.0% [9] whereas in current research work the rate of mortality was about 18.0%. In the developing countries as Pakistan, OP poisoning is one of the main reasons of high rate of morbidity as well as mortality and it is responsible for the high amount of the admission in the ICU of the hospitals [10].

On research work reported that males were dominant in this disease [11]. One research work reported that 65.0% patients from 18 to 28 years of age and mortality rate was high in young males (90.30%) in comparison with the females (9.1%) [12]. One research work from Karachi stated majority of males (61.530%) with ingestion of organophosphorus poison for suicide [13]. One research work from Multan reported the fifty-four deaths out of total five hundred and seventy-eight poisoned patients [14]. One research concluded that mental state of depression, bronchospasm & too much salivation was available in every patient [15]. One research work reported that fourteen out of twenty-six patients needed the support from ventilation system [16]. In this research work, 40.0% patients needed ventilator support & 18.0% patients died because of the failure of respiration. Early recognition and very rapid treatment are very necessary to decrease the high rate of morbidity as well as mortality from these fatal compounds [17].

CONCLUSION:

The rate of occurrence of mortality because of OP poisoning is very much high in these regions of the world. The identification of the clinical aspects is very necessary to make the early diagnosis.

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