

## Descriptive Study of Organophosphorus Poisoning in the Post Graduated Hospital Khost Afghanistan

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### ABSTRACT

Organophosphorus poisoning is an acute intoxication that occurs when certain insecticides (karbofos, chlorophos, thiophos) or chemical warfare agents (sarin, soman, VI gases) enter the body through inhalation, transdermal or oral intake. Poisoning with them accounts for 1-2% of the total number of acute toxicoses.<sup>(1)</sup> The poison is able to penetrate the skin without damaging it. At high concentrations of the xenobiotic, pathological symptoms appear within a few minutes. Organophosphorus compounds dispersed in the air form a persistent cloud located near the surface of the earth, which persists for 4-6 hours. Military chemical agents are capable of maintaining toxic concentrations for several days. Lethal doses are vary greatly depending on the properties of the particular compound.

**Methodology:** Our study is a descriptive case series conducted in the year 1399 (1<sup>st</sup> 6 months). Among 1274 inpatients that were admitted in Khost post graduated Hospital during that time, 50 patients were diagnosed with organophosphorus poisoning.

**Goals of Research:** Determining the Frequency and Pattern of Organophosphorus poisoning in Khost post graduated Hospital during 1399 (1<sup>st</sup> 6 month) hejri shamsi.

**Keywords-** organophosphorus poisoning, treatment, complication, prevention.

## I. INTRODUCTION

The incidence of organophosphorus poisoning is high in our society. the main causes are family conflicts, economic problems, as well as violation of women's rights, and most of the reasons for young people are failure in love, also insecticides are freely distributed in our society and anyone can access them and they can be poisoned at any time.<sup>(10)</sup> But some people are accidentally poisoned when spraying medicine because they are not wearing protective clothing and they do not know whether the substance is absorbed through the skin or inhalation.<sup>(3)</sup>

By the nature of action organophosphorus compounds are poly enzymatic poisons, however, the

leading role in the genesis intoxication has a depressing effect for cholinesterase. Upon their absorption to the body, organophosphorus accumulates in tissues which has excessive amount of acetylcholine, then leads to severe disruption of conductivity in synapses and excited the nervous system. Symptoms of poisoning can be divided in to three groups.<sup>(9)</sup>

a) Muscarinic-like effect (resulting from stimulation of M-cholinergic receptors), which expressed in increased secretion of glands and severe vegetative disorders of various organs are occurs.

b) Nicotine-like effect (excitement N-cholinergic receptors), which are clinically manifested by fibrillations of various muscle groups.

c) Symptoms due to damage of central nervous system, So the action of organophosphorus compounds can be characterizing as muscarine-nicotine-curare-like. Recovery from organophosphorus poisoning occurs significantly slower than others poisons. Besides cholinesterase organophosphorus compounds act to other esterase's - trypsin, lipase, liver esterase. Excessive content of acetylcholine in the body causes sudden stimulation of central nervous system, spasm and cramps of the smooth and respiratory muscles causes respiratory problems. (4)

## II. METHODOLOGY

Our research is descriptive study and is based on a case series conducted from. The period of time is from 01/01 1399 to 01/06/1399 hejri shamsi year. During this period, 2311 patients were hospitalized at Khost Postgraduate Hospital. 50 patients were diagnosed with organophosphorus poisoning.

**Objectives:** Determining the frequency and pattern of organophosphorus poisoning in Khost post graduated hospital in 1399 (1<sup>st</sup> 6 month) hejri shamsi year.

## III. IMPORTANCE OF THIS RESEARCH IN HEALTH SYSTEM

We know that the organophosphorus poisoning is one of the leading factor of death and organophosphorus poisoning increased day by day in our society, also this promlums is proventable and after this research we will know the exat causes and source of organophosphorus poisoning. this study can attract the attention of relevant authorities, leading to proactive measures for prevention and management.

**Table. 1: Percentage off Organophosphorus poisoning among all OPD patient.**

Patients	Amount	Percentage
All OPD patient	25282	100 %
Organophosphorus poisoning	50	0.197769 %

In above table, 50 (0.197769 %) patients, are organophosphorus poisoning of the total OPD 25282 patients.

**Table. 2: Percentages off Organophosphorus poisoning patients among inpatients.**

Patients	Amount	Percentage
All inpatients (admitted)	1224	100 %
Organophosphorus poisoning	50	4.084967 %

In above table, 50 (4.084967 %) patients, are organophosphorus poisoning of the total 1224 inpatients, this table shows that 4.084967 % patient are Organophosphorus poisoning patients.

**Table. 3 percentages of Organophosphorus poisoning patients among male and female.**

SEX	Amount	Percentage
Male	15	30 %
Female	35	70 %
All inpatients	50	100 %

This above table shows that among all 50 patients 15 (30%) are male and 35 (70 %) patients are female.

It means that organophosphorus poisoning is more in female.

**Table. 4: percentage of Organophosphorus poisoning patients among couple (married) and single (not married).**

All patients	Amount	Percentage
Single (unmarried)	38	76 %
Couple (married)	12	24 %
All inpatients	50	100 %

The above table determine that percentage of unmarried patient are more than married patients.

**Table. 5: Percentage of patient according to patient conscious.**

Situation of patient	Amount	Percentage
Alert patient	11	22 %
Semi-conscious	24	48 %
Coma	15	30 %
All patients	50	100 %

The above table determine that percentage of coma patient are more than alert and Semi-conscious patients.

**Table. 6: Percentage of patient according to residency.**

Name of place	Cen ter of Kho st	Gur baz	Zazi maid an	Sab ari	Mand ozi	Teri zi
Amount of patient	15	6	13	7	5	4
4Peren tage	30%	12%	26%	14 %	10%	8%

The above table Shows that the percentage of patients who live in center of Khost province are more than others.

## IV. INTERNATIONAL LITERATURES REVIEW

**Korea:** This is a prospective study with are done by Eun-jung-sujin seek in 2009 in Cheonan Korea.

The main purpose of research is Factor for determining survival in acute organophosphate poisoning. This study was done in 68 in patients, that was admitted in hospital. Thirteen of the 68 patients died. The agents responsible for mortality were different. The APACHE II score was a significant predictor of mortality (odds ratio [OR], 1.194;  $p < 0.01$ ; 95% confidence interval [CI], 1.089 to 1.309) and respiratory failure (OR, 1.273;  $p < 0.01$ ; 95% CI, 1.122 to 1.444). The mortality was 0% for dichlorvos, malathion, chlorpyrifos and profenofos. However, other organophosphates showed different mortality (16.7% for O-ethyl-O-4-nitrophenyl phenylphosphonothioate, 25% for phenthoate, 37.5% for phosphamidon, 50% for methidathion). The usefulness of hemoperfusion appears to be limited. <sup>(6)</sup>

**India:** this is a retrospective study which was done in Lucknow India in 2010 by sk Rastogi Tripathi. The main goal of research is A study of neurologic symptoms of exposure to organophosphate pesticides in agricultural workers. In this study, we analyzed the cross-sectional data on neurologic signs and symptoms from 225 rural children, both males ( $n = 132$ ) and females ( $n = 93$ ) who were occupationally and paraoccupationally exposed to methyl OPs (dichlorvos, fenthion, malathion, methyl parathion) and ethyl OPs (chlorpyrifos, diazinon, ethyl parathion) as they belonged to agricultural families handling, mixing, and spraying the OP pesticides. The children completed a specially designed questionnaire (Q16) on neurologic symptoms associated with pesticide exposure with their parental help. A suitable reference group consisting of rural children ( $n = 50$ ) never involved in pesticide handling (neither outdoor nor indoor) belonging to similar socioeconomic strata included in the study to compare the prevalence of various neurologic symptoms between the two groups. <sup>(7)</sup>

**Jordan:** This is a Retrospective study with are done by AM Saadeh, NA Farsakh, MK Al-Ali in (January 1990 to January 1995) in Princess Basma Teaching Hospital, North Jordan. The main goal of research is to study the frequency, extent, and pathogenesis of the cardiac complications accompanying organophosphate and carbamate poisoning. <sup>(8)</sup>

## V. RESULT

In our research, the results of organ phosphorus poisoning patients are as follows:

Patients poisoned by organophosphorus constituted 50 (0.197769 %) of all OPD (25282) patients and 50 (4.084967 %) of inpatient (1224) patients. From the point of view of gender, organophosphate patients are 35 (70%) more female than 15 (30%) male, and from the point of view of marital status, 38 (76%) are unmarried compared to married (12 (24%) The incidence is high. From the point of view of consciousness, 11 (22%) patients were alert patients, 24 (48%) patients were semi-conscious and 15 (30%) patients were in coma. From the

point of view of acid location, 15 (30%) were residents of the center and 35 (70%) were residents of the suburb area.

## VI. DISCUSSION

In our research the organophosphorus poisoning is more in female than male, this is due to family conflicts, economic problems, as well as violation of women's rights, application of some bad cultural resin on women and most of the reasons for young people are failure in love. The cases of organophosphorus poisoning from the married side are more in those who are not married. From the point of view of the place of residence, there are more people who live in the suburbs than those who live in the center. The reason for this is the lack of education and health education and the unsafe storage of organophosphorus pellets in neighboring houses instead of protecting wheat.

## VII. CONCLUSION

The incidence of organophosphorus poisoning is higher in women than in men, in single people than in married people, and in young people than in lazy people. Also, intentional incidents are more than accidental incidents. It occurs at different ages, but most cases occur between the ages of 29 and 48. Most cases of organophosphorus poisoning are caused by contact and death in patients who are brought to the hospital after the occurrence of poisoning. And there were more cases. The patients who have eaten organophosphorus, as this substance causes an increase in the effects of the parasympathetic nerves, as a result of which the patient's secretions increase, in addition to other parts of the body, in the lungs. Due to the increase in secretions, the exchange of oxygen and carbon dioxide is reduced and the patient faces hypoxia. Due to the poor exchange of carbon dioxide, when the patient arrives at the hospital late, often due to hypoxic or anoxic encephalopathy, it is not in the brain. Regressive fractures occur, if not treated in time, the patient will die.

### **Limitations:**

Absence of a specialized laboratory for the detection of toxic substances in the hospital. Due to the lack of digital database in the medical record room of the hospital, due to the cultural traditions, the patients were kept hidden and they were not taken to the hospital on time. Due to economic problems, some medicines that are necessary for the patient are not taken. Also, due to the lack of financial resources, doctors cannot do the research.

### **Suggestions:**

- The Ministry of Higher Education should give sufficient funds to lecturers for research.
- The results of this research should be shared with the people through television, radio and other media.
- we know that suicide is forbidden in Islam, so people should be made aware of this issue.

• organophosphorus materials are sold freely in the city and everyone has access to them, organophosphorus should be severely restricted by the government, so everyone does not have access to them.

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