ORIGINAL ARTICLE

Agriculture Pesticides: Easily Available for Suicide -An Alarming Situation

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ABSTRACT

Objective: To study the clinical presentation of suicidal agriculture pesticide (organophosphate) poisoning in villagers.

Study design: Observational study

Place and Duration: Murk General Hospital Tando Adam from January 2013- Dec 2013.

Material & Methods: Thirty five patients with a history of agriculture pesticide poisoning were studied. Villager subjects confirmed of having pesticides for suicidal purpose were included, other cases of poisoning were excluded. Age, sex, clinical signs and symptoms and type of pesticide were enquired and noted on pre-structured proforma. The data was analyzed on statistical package for social sciences 21.

Results: Mean±S.D age was 23±5.6 years. Of 35 subjects, 27(77.1%) were male, with male to female ratio of 3.4:1. Suicidal agriculture pesticide poisoning was more prevalent in young male (p=0.0001). In 12 (24.2%) cases the chemical nature of agriculture pesticide was not known because of illiteracy. The chemical agents which were recognized from bottles were Chropyrifos, Methylpyrifos, Propanophos, Trichlorophos and Acephate.

Conclusion: Agricultural organophosphate pesticides were mostly used for suicide because of easy access. Public education in this regard is urgently required.

Key words: Organophosphate, Suicide, Villagers, Poisoning

INTRODUCTION:

Acute poisoning may be accidental or intentional; however, most cases are of intentional poisoning[1]. Poisons are known to humankind since the immemorial. Apart from naturally occurring poisons, the rapid progress in industrial and agricultural fields has added many manmade chemicals in environment that if handled improperly can prove to be lethal.

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The organophosphorus compounds are one of them. They have helped greatly in the green revolution as a boon but also have added to the risk of poisoning[2]. The WHO estimates that each year nearly 1 million serious accidental and nearly 2 million suicidal attempts involving pesticides occur worldwide[3]. In developing countries, the widespread use of organophosphorus compounds has been accompanied by an appreciable increase in incidence of poisoning with these agents, both suicidal and accidental. This is attributed mainly to their easy availability, indiscriminate handling, storage and lack of knowledge about the serious consequences of poisoning[4]. The various substances used for suicidal attempts in India, Organophosphorus compounds form a significant group. Poisoning is the fourth most common cause of mortality in rural India. The nature of poisoning varies from one region to another depending upon the poison availability and the knowledge of local population regarding

poisonous properties[5]. In developing countries like Pakistan, there is absolute lack of surveillance results in mishandling and misuse of agricultural pesticides. Easy access to agriculture pesticides make it most suitable agent for suicidal purpose. The present study highlights the alarming situation of agriculture pesticides used for suicidal purpose in villagers.

MATERIAL & METHODS:

Thirty five patients with a history of agriculture pesticide poisoning were attended at Murk General Hospital Tando Adam from January 2013 to Dec 2013. Only those villager subjects who were confirmed of using pesticides for suicidal purpose were included. The diagnosis of poisoning for suicidal purpose was confirmed through clinical history. Accidental and homicidal poisoning, and other than organophosphorus poisoning were excluded from the study protocol. Age, sex, clinical signs and symptoms and type of pesticide were enquired and noted on pre-structured proforma.

The data was analyzed on statistical package for social sciences 21. The data was presented in tables as mean±S.D, frequencies and percentages. The continuous and categorical variables were analyzed using Student`s t-test and Chi-square test respectively.

RESULTS:

A sample of Thirty five patients were studied at Murk General Hospital, Tando Adam, Sindh. The demographic characteristics of study population of acute poisoning are shown in table. I. Most of the subjects who consumed poison for suicidal purpose were in the third decade of life. The mean age noted was 23±5.6 years. Of 35 subjects, 27(77.1%) were male and 8 (22.8%) were female. Male predominated in present study with male to female ratio of 3.4:1. The gender distribution is shown in table 1. Suicidal pesticide poisoning was more prevalent in young male. (p=0.0001).

In 12 (24.2%) cases the chemical nature of agriculture pesticide was not known because of illiteracy.

The chemical agents which were recognized because of availability of bottles by attendants were Chropyrifos, Methylpyrifos, Propanophos, Trichlorophos and Acephate (table II). Clinical signs and symptoms of cases are shown in table III. The cases were managed as per standard of organophosphate poisoning by physician and doctors. The serious patients with life threatening symptoms were referred to tertiary care hospitals.

Table-1: Baseline characteristics of study population (n=35)

	No	%
Age (mean±S.D)	23±5.6	--
Age Groups		
- 20-30 years	23	65.7%
- 31-40 years	09	25.7%
- > 40 years	03	8.57%
Male (M)	27	77.1%
Female (F)	08	22.8%
Villagers	35	100%

Table-II: Types of agriculture pesticide

	No	%
Methyl Parathion	9	25.7%
Chlorpyrifos	5	14.2%
Propanophos	4	11.4%
Acephate	3	8.57%
Trichlorophos	2	5.71%
Unknown	12	24.2%

Table-III: Clinical Signs & Symptoms in Study Population (n=35)

	No	%
Unconscious	24	68.5%
Bradycardia	19	54.2%
Excessive sweating	13	37.1%
Conscious	11	31.4%
Seizures	11	31.4%
Hypotension	03	25.7%
Pinpoint pupil	08	22.8%
Excessive salivation	07	20%
Fasciculation	06	17.1%
Cyanosis	05	14.2%

DISCUSSION

The present study is original research work on acute suicidal poisoning of agriculture pesticides. Free access to agriculture pesticides is problematic these days, because of its misuse for other purposes like suicidal and homicidal purpose. The problem has risen to an alarming one as it is taking lives of innocent persons who because of social problems take the pesticides to end their lives for forever and their families are suffering at the most. The acute suicidal poisoning was most commonly observed in young male who cannot overcome the social problems and are mostly bread earners of their families. The findings are comparable to previous studies[6-9].

Gargi et al[10]. reported that aluminum phophide was most common followed by organophosphates and remaining poisons were rarely used for suicidal purpose as shown in table II. The findings are in contrast as present study reports organophosphate poisoning by agriculture pesticides as most common in our villager community because of easy access. A previous study[1] has reported a more frequency of poisoning in male (75.4%) vs. 24.6% in female; this finding is in keeping with present study (table. I). Though toxicity of ingested substances was not directly studied; and many factors contribute to severity of poisoning, the above observations indirectly suggest probability of higher toxicity of ingested substances in most cases. Banning of extremely toxic pesticides and restriction of their use has been urged by World Health Organization[11]. Restriction of availability of suicide methods has received some attention as a possible way of suicide prevention[12-14], though it is also reported that when one method is restricted then the suicidal methods change[12]. Legislation on drug availability and packaging has been effective elsewhere[11-14]. In addition, involving another individual from farmer community in the sale, use and safe disposal of the remaining content of organophosphorus compounds may help. Public education in this regard is urgently required. In the developing world many suicide attempters are referred to secondary and tertiary centers for lack of facility locally. It is a common observation that many attempters are brought dead to hospital[15]. Similar are the observations of present as most of serious cases were referred to tertiary care hospitals because of lack of availability of health care facilities.

Availability of basic facilities for treatment of organophosphorus poisoning at primary health care centers (PHC) and local hospitals may change outcome for many, if not for all. Increasing the ability of the primary care facilities to manage the medical complication of suicide attempt is a recognized intervention in China[13]. Periodic training to the doctors and other health care staff in community, improving their skills in assessment and management may help in dealing with more cases in community effectively in time before the duration of ingestion and specific intervention is prolonged. It may help to have clear protocol and guidelines available for managing poisoning cases. The facilities for initiating treatment sooner and respiratory support locally and while transferring the patient (if needed) may increase the chance of survival for many attempters. However these suggestions would require further focused study for their effectiveness.

CONCLUSION:

Agricultural organophosphate pesticides were mostly used for suicide because of easy access. Public education in this regard is urgently required. Rules of handling and safe disposal of pesticides must be implemented strictly to save lives of innocent villagers.

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