Study to follow up cases of acute pesticide poisoning from 1/2012 to 12/2014 in Upper Egypt

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Abstract

Poisoning is an important health hazard and one of the leading causes of morbidity and mortality worldwide. A three-year retrospective study of cases of acute poisoning in Upper Egypt investigated by Asiat forensic laboratory in the period from January 2012 to December 2014 was conducted to investigate the type, trends, incidences and type of poisoning in the study period. The study period was divided into three periods, ranging in age from fourteen to sixty-one years old. As for toxic substances that have been studied is fenthion (91.9%), followed by organophosphates (42.7%) and cyanide (45.2%). The suicidal cases were the highest number of cases (60.9%) followed by accidental cases (29.3%). The highest mortality rate was in age period between 1/2012 until 12/2014 represents the highest frequency of carbamates poisoning. (fifty-one cases - 53.1%), followed by organophosphates ( Forty-one cases - 42.7%)

Introduction

Pesticide is defined as any substance or mixture of substances intended for preventing, destroying, or repelling any pest. Insecticide poisoning is the most common cause of organophosphate (op) and carbamate poisoning. They are lipophilic substances absorbed by dermal, mucosal, conjunctiva, gastrointestinal and respiratory routes (Laurence et al., 1993). In Egypt the common preparation of op compound used in agriculture are Malathion, Parathion and Chlorpyrifos. Where Temik and Lannate are famous examples of carbamates. Although Op and carbamate are structurally distinct, they have similar clinical manifestations. Poisoning with these compounds may occur in isolation after exposure or in epidemics after ingestion of contaminated food stuffs. Organophosphorus compound are potent inhibitors of true acetylcholinesterase (AChE) enzyme due to irreversible binding of phosphate radicals of OP to the active sites of enzymes. In case of carbamates this binding is reversible.

Methods

Samples from gastric wall, gastric contents and urine were taken from each case as possible and were sent to Asiat chemical laboratory for Medico-legal department to extract and detect ( Op and carbamates ). Extraction of stomach wall :- 15gm of stomach wall were placed in blinder and homogenized successively. Solvent extraction was done by 15 ml of acetonitrile (9:1 v/v ) for 5 minutes. Then 10ml of saturated sodium chloride were add then extraction with 60 ml of methylene chloride. then filter through anhydrous sodium sulfate and the solvent was evaporated :- sample clean -up and the collected solution were evaporated to dryness , the residues were dissolved in suitable solvent for analysis by TLC GC-MS.

Results

The number of cases that have been recorded in this study Ninety-six cases. These cases recorded in the governorate of Minya - Assiut - Sohag - Qena - Asswan in the period between 1/2012 until 12/2014 – forty- three of them men (44.6%) and fifty-three women (55.3 % ). It has been found that the highest rate of the poisoning was in age from 15 to 25 years old (59.3 %). The cases that have been bailed out was ten cases, women (53.2 %). It has been found that the highest rate in the poisoning was in age ranging in age from fourteen to sixty-one years old. As it turns out in this study that carbamates were the most common cause of poisoning (fifty-one cases - 53.1%), followed by organophosphates ( Forty-one cases - 42.7%) and cyanide (45.2%). The suicidal cases were the highest number of cases (60.9%) followed by accidental cases (29.3%). The highest mortality rate was in age period between 1/2012 until 12/2014 represents the highest frequency of carbamates poisoning. (fifty-one cases - 53.1%), followed by organophosphates ( Forty-one cases - 42.7%)

Conclusions

From the results of this study, it can be concluded that the frequency of insecticide poisoning in Upper Egypt is high. Carbamates responsible for the highest frequency of poisoning. Suicidal attempts are greater in females than males. So more attention must be directed to decrease the number of insecticide poisoning cases specially in the rural areas by raising the level of education specially that of the females to decrease the incidence of suicidal attacks. Health education program is recommended to learn the farmer simple knowledge about insecticide hazards. This program should focus on the suitable type and amount of insecticide used. Also should focus on the suitable time of eating fruits or vegetables after spraying. This program should also stress on the rapid transportation of the poisoned person to the nearest hospital.

References

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